The Builder.

VOL. XC.—No. 3283. MARCH 17, 1906.

ILLUSTRATIONS.

Some Italian Renaissance Work.....From Photographs.
New Comic Opera, Berlin.....Herr Biberfeld, Architect.
The New Law Courts, Cape Town.....Messrs. Hawke & McKinlay, Architects.
Sketches (Pugin Studentship, 1906).....By Mr. Geo. Drysdale.

Illustrations in Text.

The New North and South Tube Railway. Plan ..... Page 280

Hackney Union Infirmary New Administrative Block..... Page 295

CONTENTS.

	PAGE
The New North and South Tube Railway	279
Notes	282
Hackney Central Library Competition	284
Royal Academy Lectures	285
The Architectural Association	287
The Architectural Association Spring Visits	288
Magazines and Reviews	288
The Surveyors' Institution	290
Registration of Architects	291
Fifty Years Ago	292
Illustrations :—	
Some Italian Renaissance Work	292
New Comic Opera, Berlin	292
New Law Courts, Cape Town	292
Illustrations (*contd.*) :—	
Sketches by Mr. Geo. Drysdale	293
Architects' Benevolent Society	293
The London County Council	293
Applications under the 1894 Building Act	293
Architectural Societies	294
Archæological Societies	294
Competition	294
Books Received	294
Hackney Union Infirmary New Administrative Block	295
Correspondence :—	
Fellowship R.I.B.A.	296
The Student's Column	296
Obituary	297
General Building News	297
Appointment	298
Sanitary and Engineering News	298
Miscellaneous	298
Legal :—	
Tribunal of Appeal Case	299
Case under the Public Health Act	300
Patents	300
Some Recent Sales	301
Meetings	301
Prices Current	302
Tenders	303
List of Contracts, etc.	304

The New North and South Tube Railway.

HIDING itself under the too modest designation of the Baker-street and Waterloo Railway, the new line of communication between north and south London, of which a portion was opened to the public on Saturday, may justly be regarded as inaugurating a new era in metropolitan underground railway construction. Apart from the City and South London Railway, there has been no means of rapid transit between the northern and southern districts of the metropolis, and absolutely none between them in the western region. For this reason the new tube railway fulfils a great public want, and will undoubtedly be a great success. Even if its operations were confined to north and south traffic the railway would be of much service; but providing for direct junction with no fewer than six existing and sanctioned underground railways, and with four existing surface railways, its value is infinitely greater.

On the next page will be found a plan showing the route and connexions of the Baker-street and Waterloo Railway, the unopened extensions being shown in broken lines, and other railways as indicated in the table of reference. At this stage it may be convenient to explain that the Act authorising the construction of the line was passed in 1893, and that the extensions to Paddington in the north and to the Elephant and Castle in the south were sanctioned in 1900. In 1902 the Underground Electric Railways Company entered into a contract for the completion of the works, which had been commenced in 1898. This company, having already reorganised the District Railway, are now engaged in the construction of the Great Northern, Piccadilly, and Brompton, and the Charing Cross, Euston, and Hampstead lines—the first two in direct connexion with the Baker-street and Waterloo Railway, and the last having its southern terminus close to the Trafalgar-square Station of the same line. Therefore, the group of lines projected will really provide three new north and south routes, and a new east and west route, in addition to useful connexions between existing east and west railways. The table given at the end of this article indicates the various connexions in a form permitting them to be seen at a glance. Any who examine this table and the plan will agree that the comprehensive system there represented is the greatest and most praiseworthy attempt hitherto made to deal with the passenger traffic of London.

As mentioned above, the construction of the new railway was commenced in 1898, work being started in the Thames near Hungerford Bridge by the erection of a staging on which were built workshops and offices, and an electric generating station to furnish power and light. From this staging two vertical shafts were sunk through the bed of the river to provide means for the removal of excavated earth and for the delivery of structural materials without involving the necessity of cartage through the public streets.

So far as general construction is concerned the new railway resembles other tubular subways driven through the London clay, the up and down lines being in separate tunnels of 11 ft. 6 in. diameter, practically the same as that adopted on the Central London Railway, the station tunnels being double the tunnel diameter, as usual. The work of tunnelling was performed for the greater part by the well-known Greathead shield, which is so familiar that no description is necessary. In operating below the river bed, however, a new type of shield was employed in connexion with the method known as the "clay-pocket" system, the invention of Mr. Dalrymple-Hay, one of the engineers retained by the company. The shield in question comprises a steel cylinder, 10 ft. long, specially adapted for use in water-bearing strata under compressed air against a pressure of 30 lb. per square inch. To prevent any sudden incursion of water a steel trap, consisting of two diaphragms, is fitted near the middle of the shield, the front diaphragm filling the upper half of the space across the shield, and the back one the space across the lower half. The bottom of the front diaphragm extends below the top of the other, and any inrush of water is prevented from rising above the last-mentioned level by the air-pressure maintained. Before the shield is brought into operation a series of pockets is cut in the face of the soil, and the holes are filled with clay. In

this way an annular ring of clay is formed, about 2 ft. in advance of the shield, and extending 3 in. all round beyond its periphery. Then the shield is forced forward by hydraulic machinery for a distance corresponding with the width of a ring of the cast-iron segments employed for lining the tunnel. When advancing the cutting edge of the shield is forced into the clay ring, and when the cutting edge has advanced beyond the clay first encountered the remaining portion of the ring serves as a protection, permitting the cast-iron lining to be fixed without risk of subsidence, as would inevitably occur in water-logged gravel below the bed of a river. Of course, it will be understood that the shell of clay is held up by the pressure of air employed in this system of tunnelling.

All the stations are lined with Simpson's patent grip stoneware glazed tiles, especially manufactured to withstand the severe tests necessary in the case of underground railway work. The general colour scheme adopted throughout the line represents an innovation, each station being treated in distinctive colours. The object of this colour system is to enable passengers to identify the stations without that anxious search among advertisement placards for the official announcement which is so difficult to find on most railways. The following are the colours of the stations at present open for traffic :—

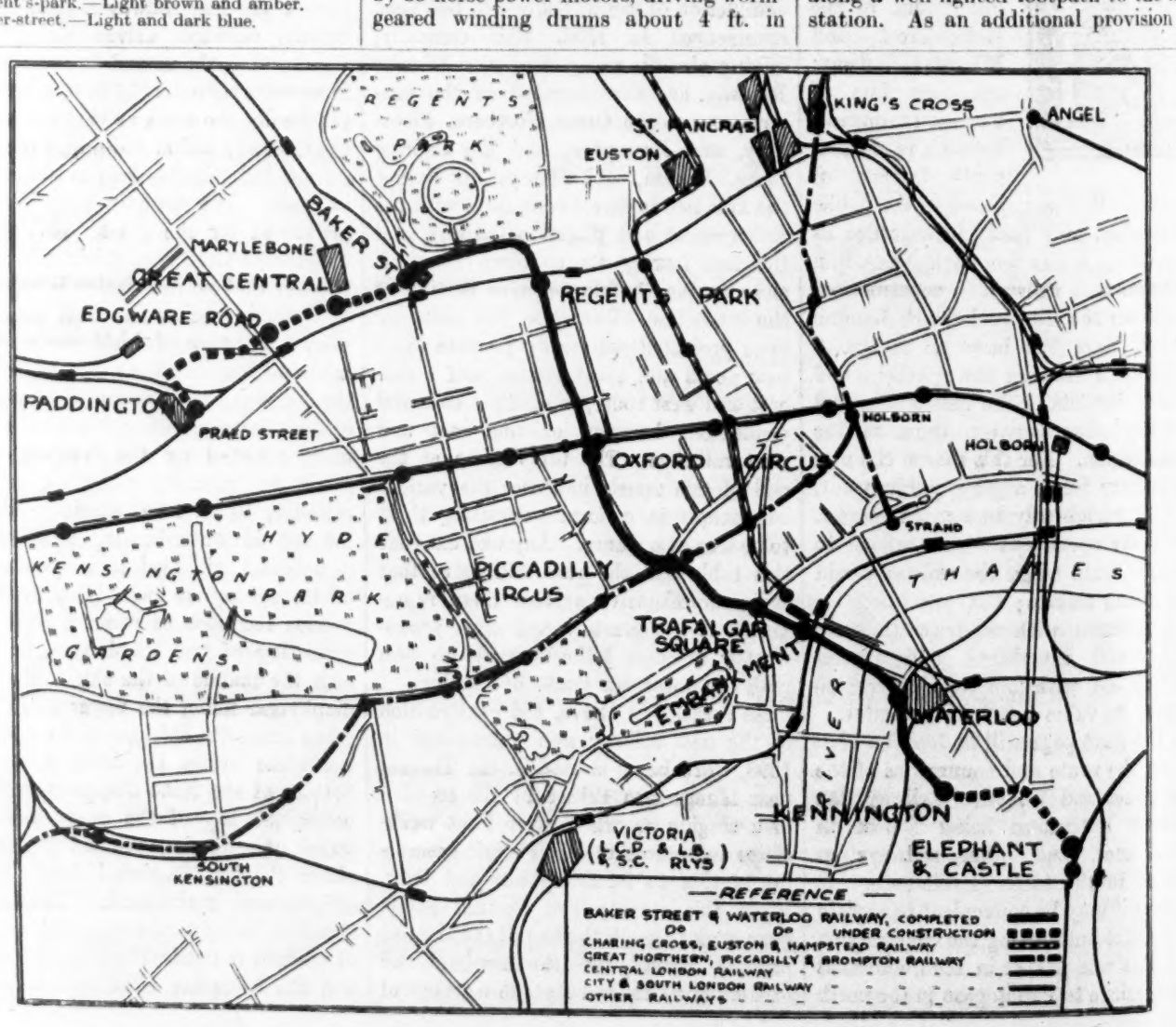
Kennington.—Light and dark green.
Waterloo.—Green and dark brown.
Embankment.—Green and light brown.
Trafalgar-square.—White (down tunnel); light green and light brown (up tunnel).
Piccadilly.—Green and celeste blue.
Oxford-circus.—Dark brown and blue.
Regent's-park.—Light brown and amber.
Baker-street.—Light and dark blue.

As a matter of convenience to strangers (and the colour-blind) the names of the stations are written in bold characters on the tiles, and permanently fired on. The tiling of the corridors and staircase shafts is treated on the same colour scheme as that adopted in the several station tunnels, the staircase tiles being fixed with vertical joints to suit the circular form of the shafts. All the booking-halls on the line are tiled in green and cream colour, the ticket openings being of glazed faience ware. It is worthy of note that a similarly distinctive colour system will be adopted by the company for the stations of the Great Northern, Piccadilly, and Brompton, and the Charing Cross, Euston, and Hampstead tubes.

Each of the station lifts has a floor area of 150 sq. ft., and on the basis of 2 sq. ft. per passenger this gives a capacity of 75 persons per lift. The cages are built of steel with Karri floors, and the entire installation is of fire-resisting construction. Each cage is suspended by four steel ropes of $\frac{7}{8}$ in. diameter, and is counterbalanced to two-thirds of its weight. Various safety appliances have been adopted for the protection of passengers. The Otis safety apparatus has been applied, and as a further safeguard each cage is fitted with two oil buffers. In case the current should fail powerful electro-dynamic brakes come into play, and effectually prevent the cage from running away. An emergency switch is provided so that the lift attendant can cut off current from the entire installation. The lifts are operated by 35-horse-power motors, driving worm-geared winding drums about 4 ft. in diameter. One innovation of very convenient character in connexion with the lifts is that passengers always leave the cars by the end opposite to that at which they enter. This obviates the objectionable crowding round the entrance which prevails on other tube railways. The lift gates are opened and closed by compressed air, and the general arrangements are such that passengers can be conveyed between the stations and the surface with a minimum waste of time.

Every precaution has been taken by the adoption of fire-resisting construction to eliminate fire risks. The station platforms are built of concrete and steel, the permanent way sleepers are of Jarrah wood, which is of the "slow-burning" class, if not absolutely incombustible; and the carriages are built almost entirely of steel, the comparatively small proportion of timber used having been treated so as to render it non-flammable.

From these brief particulars it will be seen that in respect of safety the new railway exhibits considerable advances on that of some of its predecessors. Outside the stations the running tunnels are whitewashed and lighted by electric lamps, spaced at intervals of 40 ft. apart, the service cables being quite independent of the cables distributing current for power purposes. Another excellent feature which deserves mention is that the cavity between the rails has been filled in with granite concrete, thus providing a secure footway from end to end of the line. Consequently, if a train should come to a standstill through any cause, passengers will be able to walk along a well-lighted footpath to the next station. As an additional provision for



the safety of the public, arrangements have been made for cutting off the current in any section where passengers may be called upon to make use of the footway.

We come next to the very important question of ventilation, which is so great a drawback to all tube railways except perhaps the Great Northern and City, which is the only line where the atmosphere is really fit for human beings to breathe. Although the Baker-street and Waterloo subway has been completed in accordance with designs prepared at a time when the ventilation problem had not assumed a state of urgency, the directors of the company have done their best under the circumstances to exhaust foul air, and to insure the admission of fresh air in adequate volumes. The unfortunate thing is that the tunnels were not designed suitably for perfect ventilation, which, in our opinion, can only be secured by the adoption of absolutely distinct tunnels and access shafts for the up and down lines. After considering various alternatives a system was devised by Mr. J. R. Chapman, Chief Engineer to the Underground Electric Railways Company, and based upon the following hypothesis: That if at every station air be taken out to the surface by means of a closed duct from a point situated on the tunnel platform at an appreciable distance from the physical opening of that platform through the passage-ways and shafts to the surface, then this distance will be partially filled by fresh air; the existing air being replaced by air coming from the surface down the shafts and through the passage openings. In addition, a portion of the tunnel length adjacent to the opening of the closed duct will be similarly affected. A constant closed circuit of air will obtain, and the nearer the duct opening is to the passage openings the more will be this actual short circuiting. If trains be run through a station so treated, horizontal columns of fresh air will be pushed into the tunnel from the station, and further pushed on by subsequent columns propelled by following trains.

After the general lines of the ventilation system had thus been laid down, the next point for discussion was whether the plenum or the exhaust method should be adopted. The decision made in favour of the latter is one we quite agree with. Under the exhaust system the air drawn from the tunnels is ejected through a closed duct above the roof of the station building, while fresh air enters at street-level and passes down the lift and stairway shafts, the movement of air down the passage-ways being likely to assist the movement imparted by trains to horizontal columns of fresh air. Another point is that the safety of the public depends in some measure upon the design of the ventilation apparatus. For example, if the plenum system had been adopted the foul air would be ejected through the passages and shafts, to the manifest discomfort of passengers. Moreover, in case of fire the only means of egress from the tunnels would be filled with smoke, and their use might thereby be impracticable. On the other hand, the exhaust system operates by removing foul air through a duct not used by passengers, and opening from the tunnel roof, to which smoke and other fumes caused by any unforeseen cause would naturally rise. At the same time the passages will be kept clear by the inflow of fresh air from the surface, and, therefore, always available for use.

With the object of insuring adequate supplies of fresh air, six exhaust fans have been installed at intervals along the line, each capable of moving 18,500 cubic feet of air per minute from the stations and running tunnels. While these fans are in full operation some 11,000 cubic feet of foul air are removed, and a corresponding volume of fresh air is drawn in, sufficient, in fact, to renew all the air in the average length between the stations at least once every hour. The installation is virtually a scheme of station ventilation, although the tunnels will derive incidental benefit. It is certainly a better one than any hitherto attempted on a low-level railway, but it remains to be seen whether all the benefits anticipated by the company will be fully realised.

Turning now to the equipment of the railway, it should be mentioned in the first place that the total length of the authorised line is about five and a quarter miles, and that at Kennington an inclined tunnel has been made, communicating with the surface through a depôt established on the site occupied for many years past by the Indigent Blind Schools on the south of St. George's Circus. Here ample accommodation has been provided for the housing and repair of rolling-stock. It has not been necessary to erect a generating-station for the supply of motive power, as electricity is furnished from the power-house of the Underground Electric Railways Company at Chelsea, being transmitted in the form of alternating current at a pressure of 11,000 volts to sub-stations at suitable intervals along the new line, where it is transformed to 600-volt direct current for distribution to the motors installed in every train. In order to guard against the possibility of breakdown, the main transmission cables are in duplicate, and the transformer plant at each sub-station is of sufficient capacity to supply the whole line in case of need.

In order to avoid the repetition of any trouble such as occurred on the Central London Railway, the lower portion of the tunnels has been filled in with concrete, in which a longitudinal drain has been formed, and into this firm foundation the sleepers of the permanent way are embedded. The running rails are laid to standard gauge, and consist of bull-headed sections, 90 lb. to the yard, their length ranging from 35 ft. to 36 ft. 5 in. The rail chairs are secured to the sleepers by means of screwed bolts in place of the ordinary spikes. The negative conductor rail, instead of being an inverted channel, as usual, is of square section, and is laid between the running rails, the positive conductor being carried on insulators of special design near the ends of the sleepers.

The rolling-stock at present in use comprises thirty-six motor carriages and seventy-two trailer carriages, all of these having been built by the American Car and Foundry Company, of Manchester, and, as stated above, they are of the most approved fire-resisting type. The electrical equipment of the cars was furnished by the British Thomson-Houston Company, and may be thus briefly described. Each motor-carriage is fitted with two 200-horse-power electric motors, with control apparatus and air-compressors in a steel cab at the driving end of the car. The contacts and circuit breakers are hung from horizontal slate panels carried by rigid steel frame-work. This mode of installation is clearly advantageous, for, in the event of any fault taking place, it is far safer to have the apparatus enclosed in a steel compartment than beneath the car, as in the case of the District Railway.

In respect of signalling we may say that the electro-pneumatic system has been introduced, in a manner providing for both automatic and semi-automatic working of the signals and points, and including a complete scheme of interlocking. Each of the trains works the signals in the following manner:—A signal is placed inside the forward end of each block section, this signal being automatically set to "danger" as the train passes. When the train has reached the end of the block section it automatically sets the signal at the backward end of the next block to "clear," so that there is always a danger signal at a sufficient distance behind each train to permit the next train following to be pulled up by an automatic stop. This stop prevents trains from running past any danger signal, and consists of an iron arm outside the track rail, actuated by a compressed air motor acting in unison with the adjoining signal motor. When the signal goes to danger this arm is raised to a position in which it engages with the cock on the air-brake system of the train. Thus the brakes are automatically applied if the driver should disregard the danger signal. Another safeguard is that, should a driver release the handle of his controller for an instant, the current would be automatically cut off from the motor and the continuous brakes applied.

An ingenious telephone system has been provided for the use of drivers, telephone instruments being installed on every motor-car, and fitted so that connexion can be made from a train in any part of the tunnels with copper conductors running alongside the train, and thereby communication can be opened with the nearest passenger station, with any of the exchanges used in connexion with the power-house at Chelsea, or with any of the public telephone exchanges.

From the foregoing description it is evident that every possible effort has been made by the company to provide for the comfort and convenience of the travelling public, and that every available means has been applied to provide for their safety. One disadvantage, however, shared by this line with other tube railways is the gap presented, particularly at Baker-street station, between the carriage steps and the edge of the platforms. Heedless and short-sighted people run some risk of injury under the present state of things, but we understand that this is engaging the serious consideration of the company, and it is to be hoped that a satisfactory remedy may soon be found.

The present line is, of course, only

a portion of the much larger undertaking to which allusion was made in the early part of this article. Consequently, its usefulness cannot be fully developed until the further railways included in the general scheme have been brought into operation. Still, we are confident that this first instalment will confer a great boon upon the people of London, and when the entire system is opened it will constitute an admirable object-lesson of what may be accomplished by judicious and well-co-ordinated schemes towards the solution of the passenger traffic problem.

TABLE SHOWING MEANS FOR THE INTERCHANGE OF PASSENGER TRAFFIC (BAKER-STREET AND WATERLOO RAILWAY).

Station.	*Connected and Adjacent Railways.*
Elephant and Castle	City and South London Railway.
	County Council Tramways.
Kennington	County Council Tramways.
Waterloo	Waterloo and City Railway.
	London and South-Western Railway.
	South-Eastern and Chatham Railway.
	County Council Tramways.
Embankment	District Railway.
Trafalgar-square	South-Eastern and Chatham Railway (short walk).
	Charing Cross, Euston, and Hampstead Railway (short walk).
Piccadilly-circus	Great Northern, Piccadilly, and Brompton.
Oxford-circus	Central London Railway.
Regent's-park	Metropolitan Railway (short walk).
Baker-street	Metropolitan Railway.
Liscon-grove	Great Central Railway.
Paddington	Great Western Railway.

NOTES.

The Panama Canal. AT last the full Report of the Board of Consulting Engineers, together with the Report of the Isthmian Canal Commission, a letter from the Secretary of War, a statement by the Chief Engineer to the Canal Commission, and a letter from the President of the United States, have been submitted to Congress. The President's letter is justly characterised by the *Engineering Record* as "most surprising and scarcely less disappointing." When appointing the Board of Consulting Engineers in September last the President said:—"I have named you because in my judgment you are especially fit to serve as advisors in planning the greatest engineering work the world has yet seen." Now that the Board have reported in favour of a sea-level canal, the President, acting in concert with the Secretary for War, has written to Congress strongly recommending the reversal of the finding, and the sanction of an 85 ft. summit level canal with six locks. It is indeed an extraordinary thing that the President should have thought it worth while to appoint a Commission of experts if his intention was to be his own consulting engineer after all, in the event of a decision adverse to his own feelings. Bearing in mind the fact that the whole subject has been submitted to the prolonged study of a body of the most experienced American and European engineers, it would be only reasonable to suppose that the recommendation contained in their Report would be adopted without question. Of course, the matter is not yet settled, for the final opinion of Congress has to be taken. The project now advocated by the President is clearly not the best, and, if once carried out, there will be no possibility of afterwards converting the lock canal into one at sea-level, as was formerly anticipated. Hence any false step will be irrevocable. And in view of the enormous expenditure involved, the issue clearly demands most earnest and unbiassed consideration by the final Court of Appeal.

Two Bills on Trade Disputes. TWO BILLS have already been introduced in the present Parliament relating to Trade Unions and Trade Disputes. Of the first, which is presented by Mr. Hudson, nothing further need be said than that it is identical in its terms with the Bill of last year known as Mr. Whitaker's Bill. The second Bill is presented by Sir Charles Dilke, and is supported by Mr. Keir Hardie, who also supports with other members the first Bill. The Bill in the memorandum states that its object is "completely to restore Trade Unions to the legal position in which they were intended, and until recently were understood to stand," but it would appear more accurate had it stated that the intention was to place them in the position in which they wish to stand. This Bill is also only a replica of one introduced by the same members in 1904, save that the clause as to "peaceful picketing" is now the same as in Mr. Hudson's Bill. The two Bills are practically the same, except that Sir Charles Dilke's Bill, besides legalising "peaceful picketing," rendering actions against Trade Unions impossible and altering the law of conspiracy so that combined action on the part of two or more persons in furtherance of a trade dispute shall not be actionable unless similar action on the part of one person would be actionable, in Clause I. carries the matter much further, since it provides that an interference by one person, in furtherance of a trade dispute, with the exercise by another person of his right to carry on his business or with the "establishment or continuance of contracted relations between other persons," is to give no ground of action. Is any comment required on such a clause? We hardly think the labour party can seriously contemplate the introduction of such an element of discord into their trade relations; and, if they do, we feel assured that the working men themselves will resent the introduction of irresponsible interference in their relations with their employers and with the conditions of trade generally.

Making up Streets. AN interesting question was decided last week in the case Mayor, etc., of Hornsey *v.* Birkbeck Freehold Building Land Company, on appeal from the justices. The respondents, the land company, were owners of property which abutted on Birkbeck-road, situated on its north side. The boundary between the Hornsey Borough and the Friern Urban District runs along the kerb on the north side of the road, the north footpath being in the Friern District, but the roadway and the footpath to the south side of it being in Hornsey. The Hornsey Borough Council, acting under sect. 150 of the Public Health Act, 1875, had made up the roadway and the south footpath, and apportioned the expense as regards the roadway between the owners of premises on both sides of the road. The sum apportioned to the respondents was 72*l.*, and the appellants, the Hornsey Borough Council, were suing them for this sum. The Divisional Court have decided that the Borough Council had no power to charge the owners outside their own district, and thus the action failed. The decision is of considerable importance. It is to be observed that sect. 150 of the Public Health Act, which deals with such streets not being highways repairable by the inhabitants at large, contemplates the expenses being borne by the "owners or occupiers of the premises fronting, adjoining, or abutting" upon those parts of the street which require making up. The accident that this road lay between two districts would seem to have the effect of making the whole expenses incurred in making up the roadway a charge upon the owners of houses on one side alone, and to create some hardship to them. The Friern houses did not drain into the sewer under the road as the Hornsey houses did, but their owners appear to have had all the advantages of the road, and yet to escape liability.

Speed Regulators and Motor Omnibuses. THE conviction of two motor omnibus drivers for exceeding a speed of 16 miles in London draws attention for the necessity of motor-car manufacturers applying some mechanical contrivance which automatically shall fix a maximum speed limit. In the two cases in question the defendants relied upon the fact that the omnibuses were fitted with automatic governors, which rendered it impossible to exceed 12 miles an hour, but the magistrate found that these governors were capable of being tampered with, and that the omnibus company had posted notices threatening with dismissal any driver who should tamper with them, and in face of this fact he refused to accept a statement that the governor had not been tampered with, and accepted the evidence of the police as to speed taken by stop-watches. If the motor omnibus is to supersede the horse-drawn vehicle, it is important to the companies that speed governors should be fitted which cannot be tampered with, and there would appear no difficulty in accomplishing this in the case of vehicles going a moderate pace in fixed localities.

Acceleration and Accelerometers. THIS is the title of a paper read before the Junior Institution of Engineers by Mr. A. P. Trotter, the Electrical Adviser to the Board of Trade, who deals in very plain language, not unflavoured by just a suspicion of what may be termed latent humour, with phenomena of much interest to users of railway and other public carriages. Mathematicians tell us that the force of acceleration varies in a manner indicated by a certain arrangement of algebraical and trigonometrical values, which, however, does not appeal to all minds, and certainly does not convey a clear conception of the practical effects produced by acceleration and retardation upon passengers in systems of traction, where high speeds and numerous stops occur. The employment of higher speeds on suburban railways has had the effect of bringing the subject prominently forward, for in such work acceleration is of far greater importance

than full speed running. It is important that acceleration should be taken into account in designing, and equally important that it should be accurately measured in experiments. From the standpoint of the engineer, acceleration is a force measured in pounds per ton of train, while to a passenger it is the rate of change of velocity, which may have the effect of slewing him violently forward or backward when seated, and of throwing him off his balance or throwing him upon a pile of other passengers when standing in a carriage. The various ingenious accelerometers described by Mr. Trotter are capable of indicating acceleration and retardation with much nicety, and are extremely useful for studying the results of traction in a scientific way. The practical value of scientific study is that it ought to lead to the arrangement of braking apparatus so as to reduce the violence of slewing, lurching, and jerking to a minimum, without operating against the reasonable desire of passengers to attain the end of their journeys as rapidly as possible.

Improvements in Dynamos.

AT the recent Electrical Exhibition at Olympia the most striking novelty in the design of most of the dynamos and motors exhibited was the use of "inter-poles," that is, small poles placed between the field poles so as to counteract the demagnetising effect of the armature currents and the consequent excessive sparking of the brushes when the machines are running under load. The use of these inter-poles enables the constructor to build machines for much higher voltages, which will run without sparking at all loads, and, in some cases even, without moving the brushes. In a recent communication to the *Electrical World* of New York (February 24, 1906), Mr. F. J. Sprague, one of the pioneers of electric traction, gives extracts from patents which were taken out by him as long ago as 1884, conclusively proving that he had completely anticipated modern practice in this respect and that motors made on this principle were running in New York in 1886. It is curious that the Sprague Electric Railway and Motor Company should have laid aside this method for many years whilst making developments in other directions, and only taken to it again at the same time as their European rivals. The possibility of constructing direct current dynamos and motors economically for pressures of 1,500 volts and upwards will modify ordinary practice in connexion with the design of electric systems for heavy traction work. With these high voltages new methods of regulating the speed of direct current motors become feasible, and Mr. Sprague states that with his 1,500 volt motors the ratio of the minimum to the maximum *economical* speed is 1 to 8, and that the motors will run practically equally well at any speed between these limits, the controller giving almost a continuous variation of the speed. In a recent article also in the *Elektrotechnische Zeitschrift* Herr Dettmar predicts the important consequences that will follow from the cheapening of the cost of high voltage direct current machines not only in electric traction but also in power transmission.

Clun Rural District, Salop.

THE Report of Dr. Reginald Farrar to the Local Government Board on the Sanitary Circumstances and Administration of the Clun Rural District, Salop, states that, while the district in respect of house property compares on the whole not unfavourably with other rural districts, defects in housing conditions are sufficiently numerous to call for vigilant and systematic inspection by an inspector of nuisances. In regard to water supply, the district being intersected throughout by high hills which form good gathering grounds and yield copious springs at their bases, the problem should present comparatively little difficulty; but it is computed that less than half the population of the district derive their water from supplies conveyed by pipes; the remainder draw water from shallow wells, from springs, sometimes converted by steining into dip-wells, or from brooks; and in many cases the supplies thus obtained are inadequate in amount or liable to serious pollution. The pollution of the river Clun by the sewage of Clun, and by privies built over it, is noted as a state of things that ought not to be allowed to continue. "It would, I think, be practicable," says the Report, "without undue expense to gather the drainage to a single outfall on each side of the river, and by means of septic tanks and filter beds to purify the effluent before discharging it into the stream. This is a measure which the Rural District Council should take seriously into consideration." The disclosures as to removal of excrement are as bad as we are accustomed to find in these cases of insanitary country districts. It was found that some of the school privies had only been cleaned out twice in fourteen years. Dr. Farrar's remark at the close, that "the Rural District Council should take a more serious view of their responsibilities, as a body charged with the care of the public health," seems certainly to be not uncalled for.

Church of St. Michael, Burleigh-street, Strand.

THE final services were held on Sunday, September 10, of last year, and the parish having been united with that of St. Paul, Covent-garden, the church will shortly be pulled down by order of the Ecclesiastical Commissioners. It was built in 1832-3, as St. Michael's Chapel-of-ease to St. Martin-in-the-Fields, after designs in the Gothic style by James Savage. The interior was re-seated and otherwise improved in 1862, and 300*l.* has since been expended upon repairs and decoration in memory of Queen Victoria. The east window was a gift of Lady Burdett-Coutts in honour of the Duke of Wellington; the organ, by Gray, was restored by Richardson thirty-five years ago. The communion plate, font, altar-table and some fittings will be transferred to the church of a new ecclesiastical district at Sutton-court, Chiswick. The net proceeds of the sale of the site and materials are to be applied towards the site and the building of the new church of St. Michael to the extent of 8,000*l.*, and towards the new parsonage-house, a repair fund for the existing parsonage-house (for which the Duke of Bedford gave the ground), and the augmentation of the income of the united benefice. The freehold site, at the corner of Exeter-street, extends over about 4,400 ft. superficial, and will be offered for sale at the Mart on March 27.

No. 15, Buckingham-street, Strand.

THE impending demolition is announced of the large house which stands at the southern end, east side, of Buckingham-street, near the York water-gate in the Embankment-gardens. The house was occupied in 1689 by the Tsar Peter the Great, who had for his opposite neighbour Samuel Pepys, who lived at No. 14 in the interval 1684-1700. No. 15, a former home of the Institution of Civil Engineers, was afterwards the residence of W. Black, the novelist, and is mentioned in his "Sunrise." Nos. 14-5 are delineated in one or two of Samuel Scott's pictures of the riverside, but No. 14, we may point out, has been rebuilt since, as will be seen from a comparison of the present state of things with the view as depicted by W. James in his painting of or about 1756, which is now, or was lately, hung in the Queen's Presence Chamber, Hampton Court Palace. No. 15, which has two ceilings finely painted by hand, overlooks York-terrace, formerly Villiers-walk, a water-side promenade of which Hugh Hewson, Smollett's school-fellow and the original of his "Strap," was keeper during many years. Hewson's death, at the age of eighty-five years, and his burial in St. Martin-in-the Fields graveyard are mentioned in the *Dublin Pantheon*, April, 1809.

The Fine-Art Society.

AT the Fine-Art Society two exhibitions are open together. Mr. Fulleylove fills one room with a collection of "Pictures and Studies of some Architectural Monuments of London." These, as a whole, were a little disappointing to us; a good many of them seem to have lost the clearness of light and colour on the buildings through having been somewhat overworked on the surface; we refer mainly to the exteriors. There are some excellent architectural interiors, such as "The Norman Chapel in the Tower" (21). Of two views of the interior of St. Paul's we prefer the smaller one (11); No. 31, on a larger scale, is excellent in perspective, but we have never seen the interior stone-work look so brown as it is shown here. Among the exterior views which are clear and bright in effect are "Hyde Park Corner" (4); "Waterloo Bridge" (18); "Lambeth Palace" (45), and "Old Buildings, Lincoln's Inn" (63), one of the very best. The small drawing of "The Water Stairs, South Side of Waterloo Bridge" (51A) reminds one of a most effective subject, which might very well be worth treating on a larger scale. As a record of London sites and buildings the drawings make a very valuable collection; and the panoramic view of London as seen from the top of the Tower Bridge is a great success, the more so as we are spared the sight of the bridge itself. In an adjoining room is a collection of water-colours by Miss Ina Clogstoun, under the title "Italian Spring and English Summer," of which one cannot speak without enthusiasm; they are beautiful from beginning to end. Miss Clogstoun has a fine sense of colour and gets all her detail in a true water-colour method of execution. We may

mention especially "Red Roses, Villa Carlotta" (37) for composition and colour alike; "A Gay Border—Balcarres" (44), a garden scene in a flood of light; "The Cypress Avenue—Villa Mondragone" (46); "The Pool, Villa d'Este" (52); and "Val d'Arno" (31), as some of the best in a charming collection.

Burlington Fine Arts Club.

IT was a good idea of the Burlington Fine Arts Club to honour the memory of Mr. Charles Furse by making a collection of his pictures at their rooms, and one is glad to see so many of them together; but it must be admitted that the room is too small to show them to advantage. Furse's large style of handling, in such pictures as "Cubbing with the York and Ainsty" and "Diana of the Uplands," requires large spaces, and the latter does not look nearly so well as it did in the Academy. We hope this beautiful work will be acquired for some public gallery; it ought to be in the Tate Gallery. The collection as a whole impresses one greatly with the power of this early lost painter; he would have been, had he lived, one of the greatest English artists of his day.

The Baillie Gallery.

AT the Baillie Gallery in Baker-street there is on view a large collection of flower-paintings, mostly water-colours but with some oil-paintings; it is stated on the catalogue to be the first of an intended annual series of flower-painting exhibitions. Flower-painting is beautiful practice, but a whole exhibition of this class of work rather wants interest, it is such a merely imitative form of art, and a good deal of the work is hardly the highest of its class. Among the best works are some by Mr. Francis E. James, and a large painting of anemones by Mlle. M. Lemaire, which shows great power of execution both in the flowers and the basket which forms the principal accessory. Flowers are best treated, as in this case, as portions of a still-life scheme of composition. Among the well-known artists exhibiting, but not specially known as flower-painters, are Mr. Clausen, Mr. Lorimer, Mr. Wirgman, Mr. Grosvenor Thomas, Mr. James S. Hill, Mr. MacWhirter, etc. It is odd, in such an exhibition, not to find the name of Fantin-Latour, the only artist we have known who has been able to make an exhibition entirely of flower-paintings really interesting. In the small room are some good landscapes (water-colour) by Mr. Vignoles Fisher, among which we prefer some of the smaller compositions —"Wind in the Sky" (8); "A Ray" (9); "Afternoon in February" (16); and "Amongst the Heath" (29). In the larger drawings the skies tend to be rather heavy and overloaded.

Junior Institution of Engineers.

THE Junior Institution of Engineers gave their annual conversazione on Saturday last at the Westminster Palace Hotel. The entertainment was of a most varied description; a lecture by the President (Mr. Dugald Clerk) on "Algeria," with a number of lantern illustrations, some of them showing some extremely interesting bits of early architectural remains (Roman and other); an illustrated lecture by Mr. C. Alfred Smith on "The Evolution of the Battleship"; Mr. W. Day's orchestra, and some good piano-playing and violin-playing from Miss Beatrice Dunn and Miss Evelyn Russell respectively, besides songs from several other performers. In the rooms upstairs visitors could inspect their bones with the Röntgen rays (one lady prepared to take off her glove for the purpose, but was told that was unnecessary — the rays could see through the glove), a working model of a paper-making machine was in operation, and various other models and drawings of engines, etc., were on view. Altogether the Institution may be congratulated on a most successful evening, in which instruction was happily combined with amusement.

HACKNEY CENTRAL LIBRARY COMPETITION.

THE public library is perhaps the most popular subject for competition amongst architects, and provides an occasion for the youth of the profession to try its skill. It is therefore not surprising that the request for designs for a central library for the metropolitan borough of Hackney should meet with the very large response represented in the 152 sets of drawings on view at the Corporation Baths. Each set consists of ⅛-in. scale plans, elevations, and sections, ½-in. scale details and perspective view; and the sight of this enormous amount of wasted work lining the upper walls and the entire extent of the tank of a very large swimming-bath is a matter for serious reflection. The depression produced upon the spectator is somewhat lessened when it is seen that at least one-third of the schemes are absolutely without merit of any kind, and represent the extraordinary diversion of thought and ideal existing in the minds of the increasing number of followers of the art of architecture.

Ten thousand pounds is the amount of money at disposal for a building which is to occupy an irregular quadrilateral site measuring about 84 ft. to Mare-street, 128 ft. to Paragon-road, 46 ft. to Valette-road, and 118 ft. to a party boundary on the north side. The usual accommodation is required, and the 152 ways of regarding the problem are interesting and remarkable. With the award and report of the assessor, Mr. J. W. Simpson, we are in entire agreement.

The entrance is subservient to the location of the departments, and in this instance the principal street, Mare-street, has a short frontage. Very few designs provide the entrance from this thoroughfare, but the angle position is mostly attempted, and produces the best solution of the problem, while a side doorway is the one next generally adopted.

The three premiated designs have angle approaches. Mr. H. A. Crouch, No. 26, is the winner of the competition with a design which we say without hesitation is very much the best. Naturally there must be great similarity in the numerous schemes, but the adroit stroke in Mr. Crouch's scheme lies in the protrusion of the public counter of the lending library into the main hall. To the left on entering are the main stairs and the children's library; opposite the door is the lending library, while the newspaper-room is immediately on the right. On the first floor the magazine-room is on the Mare-street front and the reference library on the Paragon-road side, but both floors are arranged in such a way that official supervision is perfect. Through ventilation is contrived for the ground floor departments by lowering the stack-room of the lending library, an important point not generally provided. Areas of rooms were left to competitors, and we think the author has given an excess of space to the reference library. There is no escape for readers in the women's magazine-room other than through the men's part of that department, and the approach to the sanitary conveniences for occasional public use is not happy. It is impossible to include all the necessary points, but this plan obtains more than the other competitors show. The architecture is admirably expressive of the purpose of the building. A stone rusticated angle pavilion with a semi-circular open porch is the dominant feature. The fronts are of brick and stone, each terminated by a stone projection. There is a sense of dignity in the scheme, which is well expressed in an excellent view, and the deep brick frieze, from which windows are excluded, supplies a breadth and massiveness of considerable value. The Borough Council is to be congratulated upon the successful issue of the competition.

No. 23 is placed second, and is the work of Messrs. Trimnell & Davison. The plan is very similar to the selected design, but is not so simple or easy in working, and is, moreover, greater in cost. Only a part of the news-room receives cross-ventilation, but a mechanical system is provided, for which a turret is placed on the Paragon-road roof. The ground floor supervision is open to improvement, while the first floor lavatory, etc., is liable to become a public convenience owing to its undue prominence. The lighting of it is not happy, a point evidently shared by the authors, who omit the small side windows from the perspective drawing. A large dome emphasises the angle entrance. Some detail hereabouts is very ordinary, but the rusticated Ionic pilasters are eccentric, and the upper main windows have unpleasant proportions. Whereas the first design makes full use of corners in the angular planning of the hall, No. 23 is wasteful in getting nothing out of the corners, in spite of the possibility of the authors' intention to arrange flues.

The third premiated design, No. 140, is the work of Messrs. Crouch, Butler, & Savage, and, although it is still planned upon the preceding principles, has less merit, and scarcely deserves premiation. The whole site is built upon, which produces that excess of corridor and consistent generosity of treatment which is the weak element in the scheme. The inner and outer doming, for instance, is a method more suited to a huge building than the humble institution of a library.

Some remarks upon a selection of the remaining designs may interest our readers in regard to the aspect of variety which characterises library competitions.

No. 6 places one range of ground floor rooms parallel with the north and one with the south boundary, and into the intervening wedge-like space the hall and borrowers' counter are driven. The central door on the Mare-street front produces a third plane in the line of this façade, and it is observed that a piece of the site is given up to the public footway. The fronts are banded in brick and stone, and there is much excellent detail, but supervision is not a strong point. No. 22 is one of the most satisfying exteriors in the exhibition. A side entrance is arranged, with news-room to the left, children's-room to the right, and the lending library between them. The detail is excellent, and, although the side street is widened for this particular perspective view, the central feature would suffer loss of dignity in the side road.

A stone building and another angle entrance plan is No. 32, wherein two staircases are unnecessary. The fronts have interest, but the curved angle portico, with columns two stories high, is overpowering, and the arcaded flanking façades are poor and heavy. The supervision is well considered. A convex wall behind the portico and appearing in the parapet above is an honest way of producing this now popular combination of features.

No. 33 is a very good exterior of the angle entrance type drawn beautifully in pencil; the plans were unfortunately missing. A good example of the typical design of the fronts in this competition is seen in No. 45. Here is the customary domed angle pavilion, with brick side fronts terminating in stone-featured projections. The weak spot in the planning of No. 46 is the placing of the newspaper-room, the most frequented department, in the rear of the site, and the consequent passing of the chief traffic through the length of the building.

There is an air of rapidity about the drawing of No. 50, which also characterises the planning. The fronts are consequently too much broken up. The author has large ideas of the magazine reading public of Hackney, but we are afraid that the ladies

of the borough will not care to ascend and descend the two staircases in order to pass from one side of the building to the other.

There is magnificent force in the external qualities of No. 53, from the view of which the return front is wisely omitted. The scheme covers the whole space, and is wasteful in general respects. The quiet simplicity of No. 54, which is a stone building, is refreshing. The planning is simple, although not facile, but the design and detail are commendable.

The circular hall plus the staircase hall in No. 55 is somewhat unnecessary, but the plan is otherwise excellent and easy working. The exterior is more suited to the demands of a town hall. There is a sense of experience in the details of No. 58, which has a side entrance, but perhaps the main corridors are overdone in length. The elevations have much good detail. Although the rendering of the view of No. 62 suggests the scene of an inquest rather than the eagerness of people in search of light and leading, there are many merits in this design. The angle portico, together with a large inner hall, is not economical, while the door to the news-room is quite inadequate.

No. 67 is on the lines of the leading trio, and is an excellent design. The recessed angle treatment with projecting circular portico, above which rises a charming turret in stone, is one of the most pleasing ideas in the whole series of designs. We certainly think this scheme would have obtained a premium had the Mare-street front received more consideration. No. 71 is emulating the qualities of a town hall, and has a large, oversailing eaves to a flat gable, which is carried to the ground by the agency of three pairs of pilasters. The central pair is unhappy, and occupies a place usually assigned to the entrance doorway, and thus discloses one defect. The news-room at the rear of the site is another, but the interior would be very dignified. The drawings are charming.

We do not understand the special reasons for giving the plan of No. 72 the external expression of a plain domestic residence. Although the supervision is faulty, the scheme merits a more serious idea in fronts. No. 74 is a good scheme, quite on the right lines. The lending library and book store above, however, prevent the other ground floor departments getting the necessary cross-ventilation, and perhaps the reference-room, although having no windows in the outside wall, would be noisy on the Mare-street side. The view of No. 80 shows much tasteful design, but the scale drawings are miserably rendered. No. 86 is one of the best plans, and has good fronts, but the view does not adequately convey this idea. There is a magnificent lobby for borrowers in No. 91, which will be an excellent romping place for the children, whose room it also serves. Another drawback is that the librarian will see the sky, and nothing else in nature, and would not fail to tell the author of this fact. The party wall copings on the roofs are surely not serious. No. 99 is one of the many miniature town halls, and is municipal even to the balustrade of the basement areas. No. 108 is a charming design, and appears to be a most fitting building for its purpose. The entrance at the north corner of the site involves a long, top-lighted corridor to the news-room at the rear, the position of which is objectionable. Again, the irregular recessing of the side front is not satisfactory. The view admirably shows a brick and stone Georgian design, in which the roof plays a strong part. In addition to the excellent gables, the façade has stone terminal projections and a frieze of circular niches containing busts of famous literary men. The plan is directed chiefly to this front, and not to the actual site. The plan of No. 138 has merit, and the severely learned quality in the Greek Classic idea is interesting.

LABOURERS' COTTAGES.—Answering a question by Mr. John Roche as to the building of labourers' cottages with regard to which the Ballinasloe District Council state that the cost of acquiring a cottage for a labourer costs almost 100*l.* more than it did before 1898, the Chief Secretary for Ireland states that the proposals contained in the Labourers Bill, which the Government are to introduce, will tend to diminish largely the incidental expenses connected with schemes for labourers' cottages.

ROYAL ACADEMY LECTURES.

ON Thursday the 1st inst. Sir William Richmond commenced a series of three lectures on "The Development of Sculpture." Lectures, he said, on subjects of this kind could not teach much; they were a stimulus only; and the three which he was to give must be taken as representing a continuous argument; the concluding one would not be intelligible apart from the opening argument. He wished to commence with some preliminary considerations as to the origin of art. It would seem that man had always had an impulse to represent in some way either what he saw or what he imagined; whether the primary moving cause towards doing so was mere curiosity, or admiration, or fear. But the impulse must have existed long before any time of which we had historic evidence, for the oldest known representations, the ancient incised drawings on bone of the cave-men, of which they could see examples in the British Museum, could not be the first efforts of man at drawing; the people who did them were in their way accomplished artists; their drawings could not be called primitive: there must have been a great deal done before they arrived at that stage. Man could never have been without some degree of artistic aspiration; it was that which more than any other quality distinguished him from animals. The communication of ideas by some kind of pictured symbol probably preceded writing, and even was to some extent the origin of it; the symbols drawn became stereotyped emblems, and formed the foundation of alphabets. The origin of design would probably arise in the decoration of weapons; weapons were a necessity in savage life, and the idea of decorating them perhaps arose partly from the desire to give them a personal value as property. The love of beauty for its own sake one could not account for, save by supposing that man had in his nature some infinitesimal portion of the Divine nature, leading him to the desire to create some ideal possibility; ideas being at first only expressed by symbols, a block of stone serving as an idol, till from this the symbol rose by degrees to the perfect art of the Greeks. But art had concerned itself also with the grosser aspects of nature; the first ideal was that of beauty, the second that of gauntness and ugliness; this double nature, that of Love and Fear, had always existed in art. Could we question the Primeval man, he could perhaps have told us whether his symbolic art was the offspring of terror or of love. Perhaps it arose from both feelings at once; like the ancient Egyptians, the primitive man might have made a mythology out of his own emotions. All art, in one sense, was symbolism; as the primitive man made the circle an emblem of the sun, a modern child would make some scribble on paper which represented to him some idea that was in his own mind. It was noticeable that children took to drawing before they took to shaping anything in the round; this symbolism in the representation of form was the germ of idol worship, as it was also the germ of portraiture. Recently the attempt had been made to divorce art from meaning; Literature was jealous of Art representing ideas, or recording facts or narrative; art was to be content with form and rhythm. But there was nothing to forbid our uniting the ethical with the æsthetic in art; the greatest men had done so. We should avoid such narrowness, as we should also avoid the mistake of regarding art as a series of different professions. Art was *one*, though a variety of emotions were expressed by different means; to limit sculpture and painting to facts was mere professionalism. Our finer perceptions were injured by a vulgar environment; we too soon got used to it; and the present tendencies in art were vulgar—the tendency to illustrate squalor and misery; it was part of the spirit of hurry of the present day, which drove us to rush at motor-car speed over the fame of our ancestors in the act of advertising ourselves. A nation that had become pessimistic was on the way to its downfall; our proper task was to arrest this decay, not to encourage it. The real difficulty was to build into the old structure wisely and securely. It was never more difficult really to know ourselves than at the present moment. Was legitimate originality impossible? Originality, it must be remembered, was a rare quality; it did not come by leaps and bounds; it was the offspring of modesty and courage combined. Reynolds was of opinion that a knowledge of all art history was necessary before we could become original. Art had now grown, as it were, to man's estate, after passing, like man, through stages of weakness and disease. What seemed new was a growth out of the old stock; the links in the chain could be traced back to 5000 B.C.; the men of the Stone Age were our artistic ancestors; we were echoes of the past, and our own work would echo to the future. The idea of evolution applied to art as well as to science, and there was therefore a grave responsibility on us of the present day to make a worthy choice of subjects. Intelligent natures would continue to look for a motive in the arts of design, and what was said in art must be related to what was highest in our nature. Religion was the great inspirer of ancient art; its two types, the Pagan and the Christian, the figures of Jupiter and Christ, had become almost inseparable from artistic expression. Philosophy had not reasoned away the idol forms from art. But the fear that beauty was a kind of snare was far too widely spread. The nude form shocked the *bourgeois* mind, yet the Bible quoted it as the image of the Creator. He could not but say that he valued Tradition, and did not believe in a "New Art."

This preamble was necessary in order to explain the view which he took of his subject. Let them consider now what they saw in the artistic remains of the oldest known civilisation—the Pyramids of Memphis and the Sphinx, going back to about 5000 B.C.; perhaps even earlier. The Sphinx was the oldest piece of sculpture known to us; when Pliny saw it, it was coloured, as sculpture was coloured in the Greek and Mediæval Periods also. It was an extraordinarily expressive work, especially in its diversities of expression. He had seen it during every hour of day and night, changing its expression with the time of day; it looked grim at noonday, in full sunlight; it took a cynical expression at sunset; it was always changing. It had seen the fall of dynasty after dynasty; Moses and Napoléon had alike contemplated it; and it still remained a masterpiece; no photograph gave any real idea of it.

The Memphian sculpture was very realistic in character. The best examples were found in the tombs, especially figures carved in sycamore or acacia, the only two trees found in the Nile Valley which were suitable for wood carving. He showed the photograph of one which was evidently the portrait of a middle-class man who held some office, with a long wand of office in his hand; the character of the figure was admirably given, and the figure resembled very much the kind of man whom one might find exercising the same kind of office in the Egypt of to-day. The hands and feet, however, it would be observed, were less carefully executed than the head. In other examples, too, they found the limbs clumsily executed, while the head was full of character: it was an age of portraiture in sculpture. The statue in basalt of Chephren, the builder of the Second Pyramid, showed a great deal of artistic perception in the emphasis given to the most essential details. The life of an ancient people was more vividly shown in the bas-reliefs and paintings in the Memphian tombs than any written record could have given it. The representation of birds and animals was excellent, and reminded one of Japanese work. The gods were not represented as perfect men; they were only alluded to. It was an age of realism and portraiture. But the study of its works was a good preparation for the understanding of Greek art.

In his second lecture, delivered on Monday the 5th, Sir W. Richmond said that he would now consider the art of the Theban period in Egypt, when the seat of government had been transferred from Memphis to Thebes; a period when we found much larger temples, led up to by avenues of sphinxes, and colossal statues of kings represented as gods, and the tombs were larger and more important in their architectural and decorative treatment. From the XVIIth to the XIth century there was an inroad of a foreign Turanian race, known as the Hyksos or Shepherd Kings, who adopted the

religion and art of Egypt. The sphinxes might have been portraits of these Hyksos kings; the type of face they showed was not Egyptian. Eventually Egypt revolted and expelled the Hyksos, and after this a new and more brilliant period arose under the new Theban empire. Art in this period became important in connexion with the ideas as to the life after death, and the dead were honoured not only in the quantity but in quality of the art bestowed on their memory. Art thus became a sacred thing, a religious necessity, and illustrated ideas which in the Memphian period were only described in writing. The occupations of the deceased were illustrated on the walls of his tomb, and the myth of Osiris, who, having been permitted to visit the earth, was slain by his brother Typhon, the power of Evil, and became the guide of the souls of the dead, because he had lived with and known men. In the colossal statues the portrait character was much less marked than in earlier art; the expression was more abstract. These colossi were mostly carved out of one block of stone. In the tombs the walls were very carefully prepared for the bas-reliefs, and the design then sketched out for the carver to work upon. They retained the ground of the design untouched, not cutting into it for any accompanying detail. Did the Greeks ever see any of these Theban tomb sculptures? He thought it was probable that they did. But on the whole it might be said that the Greeks learned sculpture in the round from Egypt, and Egyptian influence was quite obvious in early Greek sculpture; but bas-relief they probably learned from the Assyrians. Was it possible that the colossal Zeus of Pheidias resembled at all the colossi of Egypt?

In considering the influences prior to Greek art they had to reckon with five nations—Chaldea, Assyria, Babylonia, Medea, and Persia. Art in Egypt had originally progressed from north to south—from Memphis to Thebes; now it took the opposite direction, from south to north. The Greeks were now to be taught by a people in Asia Minor, the Chaldæans, who again were the artistic precursors of the Assyrians. It had never been proved that Hellenic art was Hellenic in its origin.

The Assyrian reliefs might be called drawing on stone rather than sculpture in the usual sense of the term. The hunting propensities of the Assyrians gave them an interest in animals, and their treatment of these was exceedingly artistic; he might mention especially the admirably sculpturesque spirit in which they treated the lions' manes, a much better sculpturesque treatment than that of the manes in Landseer's lions. Then the Chaldæans and Assyrians were great in metal-work, and it was probable that Homer's description of the shield of Achilles was inspired by Chaldæan or Assyrian metal-work. We saw from the well-known gates in the British Museum that it was customary with the Assyrians to overlay sculpture or carving with gold or other metal, an art afterwards practised in Greece. The sculpture at Selinonte was quite Oriental in feeling; and primitive Greek art showed traces of Assyrian influence. And we could understand how this might be, for long before the colony of Naukratis was founded, Phœnician sailors, trading along the Mediterranean, had made the arts of the East familiar on European shores. Whence came the inspiration of the lions of Mycenæ, the oldest sculpture in Europe? The heads were missing, and it had been suggested that they might have been of metal. The prototype of the lions of Mycenæ was to be found in a sculpture in Asia Minor. About the sculpture of Persia little was known; the Persians were eclectics in art, and influenced by others rather than making a style of their own; and as far as there was a native art in Persia it was textile rather than graphic.

The sea-faring Phœnicians, who occupied islands in the Ægean sea, must have almost provided an education for the uncivilised countries which they visited. The archaic age of Greece was not a long period; from about 700 to 500 B.C., and it received its earliest inspiration from Oriental sources. Much fine Egyptian art which is known to us was not known to the Greeks.

At the third and concluding lecture, on Thursday, the 8th, Sir W. Richmond dealt with Greek sculpture. He remarked that the Greek vase-paintings bore a great deal of resemblance to Greek bas-relief in regard to general style and composition and the treatment of the figures. More particularly was this the case in regard to the spacing of the figures and the arrangement of the unoccupied spaces between them. The Greek artist was sensitive to the shape of every portion of his design; not only the shape of the figures but the shape of the unoccupied spaces. The vase-paintings should be studied in regard to this point in design, which was most important. The Egyptian and Assyrian relief sculptures, which were the precursors of Greek work, were always in low relief; alto-relief was a later invention. Vase-painting was commenced by the outline of the design being incised by the master artist, afterwards filled in with colour by his pupils or assistants, and probably corrected or touched upon by the master afterwards. Greek bas-relief, on the contrary, was begun as a drawing on a carefully prepared smooth surface, and the spaces occupied by the figures defined by a coating, perhaps of wax or a colour mixed with wax. Then the ground or space between was cut away till the figure composition showed as a growth out of the ground; and the interior modelling of the figures followed. Where a broad light or shadow was required the surfaces were left flat; but for obtaining strength and emphasis of effect a deep sharp sinking would be made here and there in the drapery, where it was clear of the limbs; a sinking sometimes carried even deeper than the ground, which remained as a half-tint. This device was found in the best Babylonian sculpture, but not in that of the Egyptians, who forced their design by a deep incision all round it, sometimes an inch wide, and within this there was little modelling. This was an easy way of getting effect under a very strong sun, and considering the great size and distances of the Egyptian temples there was an excuse for thus forcing the design. With the smaller temples of Greece there was not this necessity for forcing the outline, and the air of Greece was so clear that the most delicate moulding would tell. The system of delicate work in low relief was kept for the friezes—which were on the cella wall, and separated from the external architecture of the temple. With the metopes the case was different; they were placed in immediate connexion with the structural portion of the building and (at the ends) were immediately beneath the rounded sculptures of the tympanum; they therefore required a stronger treatment in high relief, some of the figures being sometimes entirely separated from the ground. In the frieze sculpture it was probable that there were no preliminary models made; the first making out of the design was a matter of drawing, not of modelling. And this led him to emphasise the point that it was important that a sculptor should be a good draughtsman, especially for setting out the design of a relief. Recurring to what he had said as to the importance of spacing, he would remark that this applied equally to the sculptures in the round in the tympanum; the spaces, as a matter of composition, were as important as the figures, especially when seen from some distance, where the figures stood out as lights against a darker background: and if, in making conjectural restorations of tympanum sculpture, the arrangement was such as to produce bad and awkward shapes of the spaces between the figures, they might depend upon it that the restoration was incorrect. Badly shaped spaces were enough to ruin a work otherwise good. The same principle held good in all forms of design; in lettering or printing the spacing between the letters was as important as the shape of the letters themselves; and the study of ornament taught the same lesson. The vase-painters worked on a limited surface, and the figures were set out as an ornament within this space. Ornament in its earlier forms was simply expression produced by line, and the earliest attempts both at ornament and sculpture were symbolical. The first statues, the *xoana*, were mere shapeless blocks, which rudely expressed the mysteries of creation. By slow degrees heads and arms were shaped on them. These were rude shapes, but they were objects of popular reverence. The wood statues representing Athene or Zeus were however richly clad at festivals. The Greeks were a conservative people, however; they did not lend themselves readily to artistic innovations, and the old wooden block still remained the idol. The ivory and gold-covered statue of Athene was the eventual outcome of this cult; was it in fact a development of the vested *xoanon?* Pheidias, in executing a sacred statue, would probably adhere to the ancient type of the idol; he would not care to experimentalise on a new type. The core of his statue was still the wooden idol, covered over with plates of gold and ivory—a *xoanon* to all intents and purposes, which gathered up in itself every ancient tradition. The complete Doric architecture was evolved from the wooden hut, the complete Greek sculpture from the wooden idol. But while Pheidias was opening up new fields of sculpture, an archaic art was being practised at the same time. The figures from the Temple at Ægina, of which fifteen were in the British Museum, ten from the western and five from the eastern pediment, were in a quite different style from the work of Pheidias, a style more suitable to bronze than marble; they had the appearance of having been designed by sculptors accustomed to work in bronze. Eyes that had been accustomed to bronze would find marble too cold in effect, hence the Greek marble statues were coloured, undoubtedly with restraint, but still they were coloured. It was likely that the colouring of Greek architecture and sculpture somewhat resembled that of Persian tiles. Until recently it had been thought that this idea of colouring sculpture was a vandalism, and there was still a prejudice against it. Not long since, however, they had seen at the Royal Academy exhibition a fine example of a modern statue by Gérôme, executed in ivory and bronze, with colour, somewhat after the idea of the Athene statue; though probably less brilliant in colour effect, yet giving some idea of the ancient practice. This was not a thing to be passed over. If a taste and a demand for coloured sculpture came in again, they would be called upon to provide it. It was worth note that Pheidias was the son of a painter; his works were decorated sculpture enriched by colour; he was not therefore a sculptor pure and simple, in the ordinary acceptation of the word; he should rather be called an artist. We could not suppose that the nude portions of the pediment statues of the Parthenon were strongly or realistically coloured, though they would not be left white marble; probably the draperies were coloured; but the interior statues were really huge idols, and it was probable that they reproduced more or less the ancient objects of reverence.

The frieze represented a procession which took place once in four years; a procession in honour of the virgin goddess. The quality of the execution in the frieze varied a good deal; the execution was the work of a large staff of artists, but the whole was drawn by Pheidias himself on the prepared wall surface, looking in that stage like vase-painting. Perhaps Pheidias finished some of the sculpture himself. The delicacy and care with which it was set out and executed were remarkable. In one place seven horses were indicated in a group, one behind another, but the whole twenty-eight legs were carefully made out, one could trace each set to the right animal. It had been remarked that the horses were small in comparison with the men, but Pheidias would take liberties with nature when the composition demanded it, and he did so in this case in order to keep the line of heads unbroken. He recommended to the students a careful study of this work, which was undoubtedly the finest and most perfect piece of relief sculpture in existence; and to produce such a work it was necessary that it should be carefully drawn first.

In studying the style of execution of the Elgin marbles he would tell them of one interesting and instructive experiment that could be made. Take any straight piece of rigid material, say a piece of iron, three or four inches long, and apply it to different portions of the surfaces of these marbles. They would find that everywhere these surfaces were flat; there were differences of planes but no absolutely curved surfaces. In Roman sculpture it was different; if they applied the same test to the Apollo Belvedere, for instance, they would find that

all the surfaces were curved. It was the same with the later Greek work of Praxiteles and his school; and this was the secret of the inferior and sensuous appearance of these works. Archaic sculpture was always building up a strong thing, even if imperfect; then a great man came and, like Pheidias, gathered up all the archaic tradition, breathed the breath of life into it, and made it noble and dignified sculpture with a noble motive and a rhythm in the leading lines and planes; the result of good craftsmanship working on tradition. Let them stick to tradition and cultivate craftsmanship; without industry and love the art could never rise to its old heights.

THE ARCHITECTURAL ASSOCIATION:

CAMERA AND CYCLING CLUB EXCURSIONS.

AN ordinary general meeting of this Association was held on Friday last week at No. 18, Tufton-street, Westminster, S.W., Mr. John Murray, Vice-President, in the chair.

The minutes and nominations having been read, Messrs. J. B. Scott and P. W. Pocock, jun., were elected members of the Association.

The Chairman announced the following further donations to the Building Fund, *i.e.*:—

	£	s.	d.
Howell J. Williams, Ltd.	10	0	0
T. Tyrwhitt	5	5	0
W. Morrison	5	0	0
J. E. Franck	3	3	0
J. E. K. Cutts	1	1	0

Mr. Tanner (Hon. Secretary) proposed a vote of thanks to Mrs. James Scott Stewart for donation of books and photographs.

The motion was agreed to, and it was announced that a meeting of the Camera and Cycling Club will be held on March 20, and a demonstration on "Lantern Slides" will be given.

Mr. Gilbert H. Lovegrove then read the following paper, prepared at very short notice in consequence of the inability of Mr. A. Vye-Parminter to read the paper arranged for, entitled "The Architectural Association Camera and Cycling Club Excursions."

"It has been impossible during the fourteen days at my disposal to prepare a connected, much less a scholarly, paper. I, therefore, propose only giving a brief description of some photographs as they are thrown on the screen to give some idea of the buildings visited by the Architectural Association Camera and Cycling Club during the past few years.

Christchurch Priory.

One of the most beautiful and interesting buildings we have visited is the Priory Church of Christchurch, hard by Bournemouth, containing specimens of every period of architecture from the early, possibly Saxon, crypt to the Renaissance of its chantries. The church has, as is usual with our larger churches, legends connected with its foundation and construction, but with these I will not delay you. The site is close to the junction of the rivers Stour and Avon, on the flat lands of the Saxon Tweoxreham, and the first mention of a church here is made in the time of the Confessor. This church, held by a dean and a college of secular canons, was swept away by Ranulf Flambard, the chaplain to William II., and it is suggested that before he was appointed to the bishopric of Durham in 1099 he began the present church, of which part still stands. The earliest existing remains are the nave arcades, the triforium, and the transepts, with the eastern apsidal chapel attached to the south transept. Next in date are the walls of the western aisles, and of about the beginning of the XIIIth century the clearstory of the nave, followed by the vaulting of the western aisles, the north porch, and the chapel attached to the north transept. To the XIVth century belong the rood screen and the reredos.

Early in the XVth century the Lady Chapel was completed and later the western tower and portions of the choir. From an inscription on the vaulting of the choir we know that this was completed between 1502 and 1520, while later still is the chantry at the east end of the south choir aisle, and in 1541 the famous Salisbury Chantry. The stalls and misereres are of various dates from 1200 to 1500.

Wimborne Minster.

From Christchurch we visited Wimborne Minster, a comparatively small building containing a great many interesting details, but, owing to the journey and the church services, very little time was left for photography. At the western end of the late Norman nave several bays were inserted in the XIVth century when the church was lengthened, and the illustration shows the junction on the north side. The choir is mainly of XIIIth century date, the east window, which is impossible for photography from the exterior, being illustrated in Parker's Introduction to Gothic Architecture. This portion of the building is raised over a crypt, reached from the aisles through an archway, over which is the beautiful tomb to John Beaufort, who died in 1444. The label stops of the arches over the entrances to the crypt are of great interest. The sedilia, which are of great beauty, are, unfortunately, un-illustrated. No one visiting Wimborne should miss seeing the museum in the celebrated chained library.

Bruges.

With the present facilities for cheap travel a week-end in Belgium is of small moment, for one can leave London at 9 p.m. and be photographing in Bruges by 4 a.m. The street opposite the station takes us past the cathedral to the square, one side of which is formed by the Cloth Hall and its celebrated belfry. The Cloth Hall was built in the XIIIth and XIVth centuries, and altered in 1561, the courtyard containing some interesting Renaissance detail. The eastern wing contains one of the most remarkable collection of local relics it has ever been my good fortune to visit, and several days could be spent studying the specimens of iron hinges, door-handles, etc., apart from the other exhibits. The belfry was begun in 1282, and finished at the end of the XIVth century, the delay being due to the rebuilding of the octagonal upper portion. The statue over the entrance is of the Madonna. Continuing along the south side of the Market-square we reach the smaller square, containing the Town Hall, begun in 1376, and restored in 1871, adjoining which is the old Municipal Record Office, built in 1535, and now the Law Courts. The façade is gilded over the greater portion of its surface, and so presents great difficulties to the photographer.

The interior is not generally visited by the tourist, but contains some excellent carving. Passing under the archway in the Record Office we reach the Quai de Rosaire adjoining the Fish Market, from which many interesting photographs may be taken. The building on the left of the illustration is the Town Hall, seen from the rear. Continuing along the back streets we reach the Church of Notre-Dame, opposite the Memling Museum, the most interesting portion of which is the old north porch. A walk round the canal encircling the city brings us to the various gateways, of which the Porte Marechale is illustrated.

Ypres.

From Bruges a cross-country railway journey brought our party to Ypres, a grass-grown city, surrounded by ramparts. The most interesting feature, apart from one or two houses, are grouped round the Cathedral and Cloth Hall. As it was Sunday, the Cathedral was left untouched, but the Cloth Hall, completed in 1304, provides plenty of subjects. Over the entrance through which the Cathedral-square is reached is a statue of John I. of Brabant. The interesting way in which monotony in so long and flat an elevation is avoided by the alternate use of blank windows filled by statues should be noted. Adjoining the Cloth Hall is the Town Hall, erected during the XVIth century, the ground floor being an open arcade, about 20 ft. wide, surrounding a vaulted hall. Behind and adjacent to this is the Conciergerie, perhaps the most interesting building in Ypres; passing under the arcade we see the side elevation of the conciergerie to the cathedral-square, and the cathedral tower, with the Cloth Hall in the background. The domestic buildings in Ypres are uninteresting compared with those in Bruges or Ghent, the best building being at the end of the town furthest from the station.

Peterborough.

Approaching Peterborough Cathedral from the station one passes the Guildhall, built in 1671 immediately opposite the entrance to the close, passing through which we see the west front, erected probably about 1238, the porch being a XVth-century addition to support the central piers. The deanery gateway, built about 1520, is of considerable interest owing to the carvings of the arms and the rebus of the prior (Robert Kirkton), the Tudor rose and portcullis, the Prince of Wales' feathers, and the triangle of the Trinity. To the south of the cathedral are the ruins of the cloisters, whence one may see the grouping of the western towers. At the east end is the "new building," 1438-1528, from which until the XVIIth century the Lady Chapel projected.

The nave was commenced about 1117, and is of unusual length; it is uncertain whether the Norman west front was ever completed. The font, of XIIIth century date, is placed in the south-western transept.

The eastern transepts and the tower are ceiled, like the nave, with wood, the bosses in the crossing being very finely carved. The transepts are of similar date to the choir, but the eastern and western arches of the crossing are of the XIVth century.

The choir contains the earliest English example of tracery in the triforium; the marble paving and baldachino were completed in 1894. This last illustration shows the original eastern extremity of the cathedral with the tracery inserted in the clearstory in the XVth century. The aisles of the choir contain some matters of interest, such as the double piscina in the north and the ruined monument in the south. The three remaining misereres of mediæval date are fastened to a board in the south choir aisle.

The "new building" was built beyond the apse at the end of the XVth century, and is of the width of the choir and aisles together.

Stamford.

Within easy reach of Peterborough is Stamford, a fascinating town containing many interesting houses and magnificent churches, while those interested in the work of John Thorpe may study Burghley House, of which he is supposed to be the architect. Its architecture, however, did not suit the fancy of our members, and no photographs were taken.

Close to the Stamford Hotel, in St. Mary's, are several small houses of interest, as also in St. Martin's, on the road to one of the entrances to Burghley Park, but to the mediævalists All Saints' Church is the chief attraction, nearly every capital in the church providing a subject, while the roof-corbels, vaulting-bosses, and almost every portion of the church are worthy of record. St. Leonard's Priory on the outskirts of the town, and now used as a barn, is of great interest.

Warmington.

A short drive from Stamford on the Oundle road is Warmington, where St. Mary's Church provides a day's work. The building, including the wooden groining of the roof, is of XIIIth century date throughout.

Thorpe.

One mile from Peterborough is Thorpe Hall, where Colonel Strong kindly gave us free access to every portion of the building. According to Blomfield, the house was commenced from Webb's designs shortly after the death of Inigo Jones, and is dated 1656; its design is directly inspired by Inigo Jones, and is uninfluenced by Wren.

Greenwich Hospital.

Greenwich Hospital has been visited twice by our members, and is always a source of interest. When Wren commenced work here there were two buildings on the site, the house facing the park designed by Inigo Jones and the unfinished palace begun by John Webb from designs by Inigo Jones for Charles II. Wren completed King Charles' block, and, making the Queen's palace of Inigo Jones the centre of the extreme south, designed two courts, with colonnades facing each other, running northwards towards the river till they joined the great court, the west side of which was already occupied by King Charles' block, opposite which he built Queen Anne's block. The junction of the colonnades with the great court was marked by the two domes surmounting the entrances to the chapel on the east side and the hall on the west. Hawksmoor continued the building of the south-western or King William's block, which was finished by Vanbrugh.

Among the City churches we have visited Christ Church, Newgate-street, of which slides are shown of the litany desk, formerly the door of the reading-desk, whose panels now form the front of the choir-stalls. These have all been cleaned, and present an entirely different appearance from the pulpit.

The font of St. Stephen's, Walbrook, is of great beauty, and a more successful subject to the photographer than the body of the church, which is too small in area for photography.

The font at All Hallows, Lombard-street, may be taken by artificial light, but the church is far too dark for successful exposures.

Hereford.

Hereford forms an excellent centre for a visit, although the town itself contains little of interest except the houses formerly known as Butcher's-row.

The cathedral tower is profusely ornamented with the ball flower, but, owing to the condition of the stone, the larger part of the exterior has been refaced, and the chief points of interest are the north transept turret and the north porch. The cloisters are almost all new.

The south transept seems to have been built about 1115 and the north in 1240 by Bishop Aquablanca, whose tomb is in the aisle of the north transept, where also is the temporary resting-place of an effigy with beautifully-carved robes of Bishop Westfayling, who died in 1602. The font is of about XIIth century date, and is carved with the figures of the Twelve Apostles; the lions supporting the base are of exceptional interest. The nave arcade is of great beauty, but has suffered considerably both accidentally and at the hands of Wyatt and other restorers, and practically all above the crown of the arches has been rebuilt at one time or other.

Ludlow.

The chief points of interest in Ludlow are the castle, the church, and the Feathers' Hotel, where many subjects are ready to hand, one of which, a fireplace, is illustrated. Being Sunday, we could not obtain admission to the church, which contains many points of interest, but the south-eastern windows are shown as an example of weathering. At the east of the church is the Reader's house, an early XVIIth century building in half timber, of which the door-head is shown.

Ledbury.

Ledbury, of which I have but two slides, is a charming village filled with interesting buildings. The market-house is one of the easiest to photograph, and is certainly the most striking. At the top of the town is Sir Michael Biddulph's house, of great size and interest.

Kilpeck.

From Hereford we drove to Kilpeck, where the remains of the castle and the little Norman church were visited. The church, as is well-known, was rebuilt in 1848, stone by stone, but nothing was recut and no new stones were used except one in the tympanum of the south door. The extraordinary freshness of the carving is a striking contrast to the condition of the stone at Hereford and Ludlow.

The few slides I have shown will give some idea of the extreme variety of the architecture visited, and, I believe, studied by the members of the Camera and Cycling Club during the past few years. I have omitted, owing to want of time, illustrating several of our most interesting visits, such as those to Gloucester and district, Hampton Court, and Morden College, as it would have been an easy matter to have filled several evenings with an account of our excursions. The excursion to Winchester next Easter will be open, as all our excursions are, to all members of the Architectural Association, and those who will go will find that the members of the Camera and Cycling Club form a very sociable section of the Architectural Association.

The paper was illustrated by a large number of lantern slides, and the Chairman, in inviting discussion, referred to the trouble which Mr. Lovegrove must have taken in preparing the lecture at such short notice.

Mr. Matt. Garbutt proposed a vote of thanks, and said that Mr. Lovegrove had proved an interesting guide to a number of buildings which they all wanted to see.

Mr. E. W. M. Wonnacott seconded the vote of thanks. His advice to ordinary members of the Association who had not taken part in the Camera and Cycling Club excursions was summed up in two words—*i.e.*, "Try them." Members who had been once went again, and that would particularly apply to foreign visits. At any time, with reasonable notice, the Camera Club would give the members of the Association an entertaining evening.

Mr. W. J. H. Leverton having supported the vote of thanks,

The Chairman, in putting the motion, said their thanks were due to Mr. Lovegrove for having prepared his paper and the slides at such short notice. Photography was undoubtedly a considerable aid to the study of architecture, and they had had before them that evening a vast field of work. He would advise students to visit the buildings shown whenever the opportunity arose. He thought that they should have one such evening at not infrequent periods.

The vote of thanks was heartily agreed to, and Mr Lovegrove briefly replied.

The next meeting will be held on the 23rd inst., when a paper will be read by Mr. A. W. Soames, M.P., on "The London Club-house of the Last Century."

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

IV.—ROYAL FRIENDLY SOCIETY BRANCH OFFICES AND TOLLARD ROYAL HOTEL, SOUTHAMPTON-ROW, W.C.

SATURDAY, March 10, was the occasion of the fourth spring visit, when the object of inspection, the Royal Friendly Society's new building, proved one of considerable value to the members of the Architectural Association, both as a study in planning and in construction.

The undertaking arises out of the great Holborn-to-Strand improvement, and the site, at the widened end of Southampton-row, was purchased by the Society from the London County Council upon an eighty years' lease. The ground has an average frontage of 60 ft. and a depth of 45 ft. The Council made certain conditions in design, the London Building Act imposed its usual unnecessary restrictions upon construction, and the rights of light enjoyed by the school at the rear of the site made the problem of an adequate financial return one of intense complexity.

The general impression of the visitors was that the architects, Messrs. Bradshaw & Gass, had achieved a distinct success as the result of some arduous labours. Under the guidance of Mr. Gass, who came specially from Lancashire, the building was inspected from foundation to roof. Some printed particulars, including lithographed plans and diagrams, were supplied to each member of the party by the architects, a privilege which was greatly appreciated.

The Friendly Society has a large office with a small basement only, at the north end of the site, while the remaining accommodation is sub-let for the purposes of the Tollard Royal Hotel, the main entrance to which is at the south-west corner of the site. The hall, office, and cloak-rooms of the hotel are at the street level. In the basement there are a billiard-room, kitchen, scullery, larders, etc., and on the first floor a large dining-room, a drawing-room, and several bedrooms. The six upper floors contain bedrooms (fifty-three in all) of a small size, but suited to the particular business of the establishment, for visitors and staff.

The back part of the two lowest stories is roofed at the first-floor level, while the main building rises in the rear to the fourth floor, the level of the old buildings on the site, and is then roofed at sixty degrees to enable the school to enjoy its right of light. The whole of the back elevation is faced with white glazed bricks and the roofs covered with white glazed tiles.

The main fronts are faced with Ancaster stone, and have certain features in Portland. The warm colour of the former is interesting. The usual idea of a rusticated treatment to the two lowest floors is introduced, but the absence of columns and their accessories and the idea of leaving the pier masses to express their own purpose is quite refreshing. The use of the gables terminating the irregular roofs procures symmetry in the end façades, and it will be realised that a considerable amount of skill is brought to bear on the point.

The construction, however, is mainly that of an American steel-framed building in which a larger extent of cross-bracing is used than is usually the case. All the walls are carried upon steel beams cased in concrete, yet the promoters are driven to the amazing course of building the independent wall-fillings of the enormous substances required for self-supporting walls by the Building Act. One of the main reasons for this form of construction is to render the building easily adaptable to other purposes than those of an hotel. The stanchions are carried upon large steel-grillage concrete foundations, while the construction generally is of a fire-resisting nature.

Some of the London County Council requirements in this building are excellent, such as the means of escape in case of fire. The two internal staircases and the external staircase are well placed, and each of the three parts into which the interior is divided by doors of a fire-resisting design are conveniently arranged for rapid exit. Requirements of an æsthetic nature were also made, such as the cutting off of the angles and the height of the cornice of the main front made to introduce a sense of uniformity with the adjoining buildings.

Bearing in mind all the conditions governing the design, it was unanimously considered that the architects had obtained the utmost possible floor-space out of the site for their clients.

MAGAZINES AND REVIEWS.

THE *Art Journal* contains an article by Lady Victoria Manners on the remarkable series of the Pembruge and Vernon tombs in the church of Tong, in Shropshire; which are well worth special illustration and description. "The Craft of Thomas Chippendale" is the subject of an illustrated article by Mr. E. Averey Keddell. The examples given vary much in merit, nor do we gather that the author of the article intends by any means to exaggerate his artistic qualities. The worst things about Chippendale are his "Gothic" and "Chinese" designs for chairs and other articles, which are, to speak plainly, about as bad in their way as anything could be, and the fact of their pretending to be Gothic makes the impression still worse. The best are those which he treated with a broad and monumental-looking arrangement of the lines of construction, with little other ornament, such as the circular-backed chair and the settee at the top of page 79. The "Chippendale Mirror," an illustration placed at the end of the article, in which the wood frame is fairly tortured into all kinds of ragged forms, is a thing so atrocious that one questions whether it ought to have figured at all in an artistic journal; it is a kind of thing better forgotten. A chromolithograph reproduction of a foreground picture by Mr. E. C. Clifford, entitled "A Sussex Garden," is a very successful piece of colour printing. In a notice of the pictures recently exhibited at the New Gallery the writer of the article, we observe, singles out as "one of the best" the hideous travesty of a picture by Manet, "Le Linge." When we see such work held up to admiration, one is inclined to ask whether painters and critics have alike gone mad.

In the *Burlington Magazine* a certain Mr. Robert Dell has revived the old contention that Pugin was the real architect of the Houses of Parliament. From his writing he seems to be totally blind to the architectural genius of Barry, to whom the real greatness of the design of the Houses of Parliament is unquestionably due, and no man who has any perception of what architecture really means can have any doubt on the matter. It is significant to find (what we did not know before) that Pugin's family, in the former campaign, had the more than doubtful assistance of the late Lord Grimthorpe, who pretended that his interest in Gothic (!) induced him to take their side. The fact is that Lord Grimthorpe was always ready to turn against and endeavour to belittle any eminent and successful architect; it was not that he desired to help the Pugins so much

as that he desired to injure Barry. The competency of Mr. Dell to speak on the subject may be estimated by the fact that he thinks the Houses of Parliament a greatly over-rated building, whoever designed it. When he says that "few of us would now agree with the extravagant praise of the Palace of Westminster that seems to have been the fashion in 1867," he only shows that he must be totally unacquainted with the current of architectural thought, not only in this country but in America also. The same number contains a review of Messrs. Agnew's "Independent Artists'" Exhibition by a prominent member of the New English Art Club, who of course discovers that the most remarkable works in the Exhibition are those of another prominent member of the same institution of eccentrics. That is what "art-criticism" seems to have come to now.

The *Magazine of Fine Arts* is going on admirably, both in illustrations and matter. It includes an article on Luini by M. Alexandre Arséne, and one on Ingres (a painter who has been too much forgotten of late) by M. Octave Uzanne, with a large number of illustrations of his works, including a page plate of the beautiful "La Source." "Old Silver Communion Plate" and "English Chairs of the XVIIIth Century" are among other subjects illustrated, and the issue also contains no less than nine separate plates in "sanguine" after drawings by Leonardo da Vinci.

The illustrations in the *Berliner Architekturwelt* are mainly devoted to the exterior and interior and details of a remarkable private house, the "Haus Erich," by Herr Otto Spalding. Externally it is a good-sized but unpretending residence of rather picturesque character, with a specially designed iron rail fence and some other decorative accessories; but the various interiors show a treatment that is full of originality without eccentricity. The walls of the staircase hall are faced with brickwork with white joints; the furniture and fittings, the stairs, the entrance gates, have all a *cachet* of their own, and appear to have been specially designed; an interesting study of the artistic treatment of a modern residence.

Concrete and Constructional Engineering, of which the first number appears this month, deserves more than passing notice as the pioneer journal in this country on the application of concrete, steel, and reinforced concrete in constructional engineering. The literature on concrete in all the chief languages of the world has become very extensive, and the English language is well to the front in this respect, especially when we take into account the United States. Nevertheless, up to the present time no British journal has been specially devoted to the subject of concrete, notwithstanding the fact that numerous publications in other countries are dealing exclusively with that important structural material. The number opens appropriately with an article entitled "The Advent of the Concrete Age," by Lieut.-Colonel J. Winn, R.E., who deals with the early history and the steady advance of concrete, when once it became recognised by engineers that the material was worthy of a more important place in engineering construction than as a mere backing for masonry and brickwork. The more noteworthy developments that followed, and the use of concrete in combination with iron and steel are then traced, some examples of reinforced concrete construction are given, and the article concludes with a consideration of the difficulties to be overcome before concrete-steel can be introduced so fully as could be desired. We agree with the writer that the great obstacle among engineers is an attitude of distrust, and among architects the restrictions of building regulations. That the obstacle presented to the application of concrete-steel by building laws equally affects another important development of structural engineering is shown forcibly in the succeeding article on "Steel-Skeleton Construction and the London Building Act," by Mr. W. Noble Twelvetrees. The writer points out that architects, even where they appreciate the merits of skeleton building construction, find their way barred by the London Building Act, which he not unreasonably considers to be at least fifty years behind the most advanced architectural practice. Personally, we are not advocates of skeleton construction, but architects who desire to adopt it should certainly be allowed to do so under rational regulations. At present the capability of a well-built steel skeleton for supporting loads without any help from brick walls is quite ignored, and architects are compelled to use just as much brick as if the steel possessed no greater strength than putty. To illustrate the practical hardship inflicted by this state of things, Mr. Twelvetrees calculates the floor space occupied in a ten-story building, measuring 100 ft. long by 50 ft. wide by 120 ft. high, by walls in accordance with the London Building Act, and with the proposals of the Royal Institute of British Architects. The results show that fully 7 per cent. of the gross area of the building is wasted by the unnecessarily massive walls demanded by the Act, this proportion representing an estimated loss of rental value in an office building of 720*l.* a year, equivalent to 5 per cent. on a capital expenditure of 14,400*l.* Among the shorter articles one by Mr. Charles F. Marsh deals briefly with "The Advantages of Reinforced Concrete for Foundations of Buildings"; Dr. Cecil H. Desch commences a series on "The Setting of Portland Cement," dealing in this instalment with the chemical aspects of the question. In addition to original contributions, the issue contains a well-chosen collection of miscellaneous information relating to new uses of concrete, tests, building laws and regulations, industrial notes, and a very complete index to recent articles and papers in the technical press and the transactions of engineering societies. *Concrete and Constructional Engineering* has made an admirable start, and if the present standard is maintained we are sure it will have a most useful and successful career.

Professor Ashley's article in the *National Review* on "Trade Unions and the Law" recognises that the principle set up in the Taff Vale case is not likely now to be got rid of, and that it is desirable that it should be maintained. But his remarks on picketing are really absurd. It should not, he says, be prohibited for several reasons:—

> "First, because it is one of the ways in which, without any action worth seriously grumbling at, a weak union may possibly become stronger; for it brings the existence of the union to the notice of people in the trade who might otherwise remain ignorant of it; and we have already accepted the apparent paradox that, in the interests of business, strong unions are preferable in the long run to weak ones. Secondly, because the attempt to prevent it cannot succeed, *and creates a bitterness of feeling that adds to the friction of industrial life.** Thirdly, because it is harmful to confuse together in the popular mind acts which the popular conscience, left to itself, regards very differently. To treat as actionable what workpeople generally regard as an obvious right is to tempt them to palliate what they themselves feel to be wrong" (!).

The last argument is truly delightful. During the bad days of Sheffield rattening it was thought "an obvious right" to threaten an obnoxious employer or "blackleg" with murder; the argument might equally have been applied there. Because working-men think they have "an obvious right" to make another man's life intolerable to him (for that is what picketing comes to) unless he joins their ranks—a "right" which no other class of society pretends to, therefore we are not to legislate against it for fear of confusing their sense of right and wrong. The passage we have italicised is even more remarkable. We confess we should think that it was the act of picketing itself, not the act of restraining it, that tended to "create a bitterness of feeling" and to "add to the friction of industrial life."

The *Nineteenth Century* contains an article by Dr. Charles Davison, the well-known expert, as we may call him, on earthquakes, on the subject of "Earthquakes in Great Britain," a summary of the evidence on this subject, from which it appears that earthquakes, though nearly always very slight, are far more numerous in this country than is generally supposed. There have been 171 observed earthquakes in England and Scotland during the last seventeen years. This is, indeed, a very small number compared with the records of what may be called earthquake countries; Japan has recorded 8,331 shocks in eight years; but it will be a surprise to many readers to learn that we have had so many. They have been mostly very slight shocks, sometimes hardly noticed except by those who were possessed of sensitive recording instruments. For the purpose of scientific observation, however, Dr. Davison thinks that these slight shocks are particularly valuable, as they can be better observed than those more serious ones which are disastrous in their effects. Dr. Davison's article contains much interesting information and theory as to the causes of earthquakes and the best system of classifying and observing them, for which we must refer the reader to his article. Mr. D. M. Morrison's short article on "The Unemployed and Trades Unions" is really an implication that the Trade Unions can no longer give any substantial assistance to the unemployed, having spent so much of their funds and influence in organising strikes which, by driving trade orders out of England, have in fact largely contributed to the present crisis, and he thinks "the country should now relieve them of a position they can no longer occupy either with dignity or with benefit to the working men on whose subscriptions they depend for existence." And he goes on to suggest whether the Trade Unions have not "unconsciously" been guilty of a serious breach of trust in utilising funds subscribed by working men in this country to assist and develop strikes abroad. The real gist of his article is the suggestion of a machinery for the regulation of labour in the interests of the labourers by means of a "Labour Tribunal" formed in every centre of manufacture, the proposed duties of which are set forth in tabular form; one of them being to collect and pay into a Government bank every week a fixed proportion of the wages of each man or woman, "the amount not to exceed what is now being paid to Trade Unions." By this the working classes as a whole will purchase the right to an allowance in sickness and a pension in old age, on the same principle now applied in the case of Indian civilians. The idea is partly suggested by the example and working of the Old Age Pensions system in Germany. This, to be sure, is no immediate panacea for the present shortness of employment, but it affords a better outlook for the future. The article is worth study.

School gives a paper on "The Warming and Ventilating of Schools," by Mr. Sydney F. Walker, which does not impress us very much, and we should advise managers of schools to pause before accepting all its dicta, and take another opinion. The paper is rather contradictory in one point, as to the open fire, which we first read has been superseded to a great extent "on account of its want of economy." But on the next page we read that "a glowing fire still offers the simplest and most pleasant method of warming, while it is doubtful if it can be beaten on the score of economy when the fireplace is one of the modern forms." We are disposed to agree with this, but it is rather contradictory of the previously quoted sentence. A large schoolroom, however, cannot be efficiently warmed by fireplaces alone; those near them will be too hot, those far away too cold; but this subject does not enter into the article now under consideration, and is to be considered in a future number of *School*. For small rooms we think (speaking from actual experiment) that the best economical substitute for the fire is the Welsbach gas stove, which not only gives out a surprising amount of heat for its small size and low consumption of gas, but has the merit of being a pretty and attractive-looking form of combustion, almost as pleasant to the eye as a fire. It requires careful treatment and will not stand rough usage, hence it would never do in rooms where boys were left to themselves; but schools include masters' residences, and for the ordinary sitting-rooms of private houses it is a very pleasant type of gas-fire, and very economical after the first installation. The author of the article recommends hollow walls for warmth, to which we reply that the disadvantages of hollow spaces which no one can get at—their possible disadvantages, at all events—far outweigh their supposed advantages, which we believe to be a good deal over-rated. We also absolutely disagree in the recommendation to have the door close to the fireplace, the supposed object being to prevent draughts crossing the room from the door to the fireplace. To have the hall outside the door warmed (as it always ought to be) would prevent that; and to place the door

* The italics are ours.

close to the fireplace is to destroy all the comfort and repose of the fireside seat, to which everyone naturally gravitates when there is no special occasion to sit at the table.

The *Antiquary* contains two articles on very interesting subjects, neither of which, however, come exactly into our category: "Mary Queen of Scots, her connexion with Art and Letters," by Mr. Blackie Murdoch; and "Notes on the Old Church Bands and Village Choirs of the Past Century," by the Rev. F. W. Galpin, reprinted from the Proceedings of the *Dorset Natural History and Antiquarian Field Club*, with revision by the author. As may be supposed, the subject gives occasion for much curious and amusing record. Mr. Galpin thinks that the disestablishment of the old village instrumental helps to singing—the clarionet, flute, and violoncello in the gallery—to make way for the organ or harmonium, leaves something to be regretted; "the practice of these wind and stringed instruments gave occupation and recreation to the peasant folk"; but if that were all, they could still add their aid to the organ or harmonium. The present writer can just recollect one of these old country choirs with its violoncello and clarionet (there had been a bassoon, but it had been laid up for want of any hand cunning enough to handle it); but to the best of his recollection it was certainly conducive to amusement rather than devotion. The country choir and its instruments were a picturesque characteristic of the period, but we can hardly think their extinction is to be regretted from any point of view. Dr. Ball concludes in this number his interesting article on "Old Heraldic Glass in Brasted Church," with which much history is connected.

THE SURVEYORS' INSTITUTION

AN ordinary general meeting of the Surveyors' Institution was held on Monday evening, at No. 12, Great George-street, Westminster, S.W., Mr. G. Langridge, Vice-President, presiding in the absence of the President, Mr. C. Bidwell.

The minutes having been read, some donations to the library and library fund were announced, and a vote of thanks was accorded to the donors.

The Means of Locomotion and Transport in London.

Mr. William Woodward then read a paper entitled "The Means of Locomotion and Transport in London," which consisted to a large extent of a review of and comments on the Report of the Royal Commission which was appointed in 1903. In the course of his remarks the author said, as to the Report of the Advisory Board of Engineers, that he was afraid that the great labour and skill bestowed on the Report had rather tended to hide its practical conclusions and to relegate to some future period works of relief which should be undertaken at once. If he differed from some of the conclusions arrived at by the Board, it was not because he did not grasp and appreciate the results of their labours, but because he thought the relief now sought for was immediate. Of one thing we might be certain, that neither the Legislature nor the London County Council would further the immediate pulling down of any large area for the purpose of forming new streets or of widening existing ones to any considerable extent; and it was, therefore, to the present plan of London we must confine our attention, much as we should, of course, like to make London streets useful as well as beautiful. The author then dealt with the present unlimited liberty of drivers and others, obsolete vehicles to be dealt with, and tramways. To his mind the most important part of the subject was the question of tramways. Should they be retained and perpetuated, or should their future use be immediately prohibited, and the present trams gradually removed from certain roadways? His own view was that the Legislature should at once, if it had the power, stop all proposed fresh expenditure by the London County Council and others on tramways and shallow subways. He included in this category both electric and horse trams. The County Council at present owns forty-eight miles out of the fifty-four now within the Administrative County of London, and enormous extensions are proposed. He did not suggest that the electric trams in outlying districts should be at once dealt with, but he did suggest that, wherever in the inner circle of London motor 'buses were likely to compete with tramways, the tramways should go. Parliament should at once step in with a short Act and prevent the enormous contemplated outlay, which the London County Council had before it, from being made. It should stop all proposed contracts both as to subways and trams, and see what effect upon the traffic of London the motor omnibus would have. He felt he could not be too insistent on this grave matter, and he regretted that the Advisory Board had not, with the views they had already expressed, made it perfectly clear that pause should be given before such vast expenditure was incurred as was now determined upon by the County Council. It was true that the Board further said that the time had not, in their opinion, arrived for a definite judgment on this question of motor omnibuses, but they unfortunately go on to say that "whatever may be the eventual result of the rival systems—*i.e.*, motor omnibus *v.* electric tram—the recommendations they had made as to routes and similar matters, including the widening of streets, "will remain unaltered." He felt certain, however, that the views of the ratepayers of London would not remain unaltered, and he would venture to point out to the Advisory Board that if the contention that the motor 'bus was the mode of transit for London proved to be the correct one, the whole fabric of the contemplated enormous expenditure on tramcar routes and tramcars fell to the ground with a crash. We now knew that permanent lines of undeviating rigidity were a mistake; we saw that the elasticity of route possible with a motor 'bus was the right thing, and he thought that the sooner the County Council also grasped that fact, the better it would be for London traffic and for London ratepayers.

In speaking of the new shallow subway along Kingsway, the author said that at the junction of Southampton-row with Kingsway, the London County Council had debouched a shallow subway for the purpose of continuing the trams coming from the Angel at Islington through Kingsway as far as Aldwych. The opening formed for this subway occupies a surface area of 172 ft. in length by 24 ft. in width, which in itself formed an obstruction to the traffic. This shallow subway is about 14 ft. high from the roadway to the roof, and has a width of about 20 ft. The trams run in the open for the greater part of the distance, and they have been constructed without any top or outside seats. This, to his mind, was a very great error. In the first place the shallow subway could easily have been made a little deeper so as to take cars with inside and outside passengers through it; next, smoking cannot be indulged in, and the pleasant summer outside ride is lost; and thirdly, there is a great loss in the number of passengers carried by each car. He hoped that the Council would stay its hand as regards these shallow subways and the trams generally. But this was not the only struggle we might anticipate from the County Council to stick to its now antiquated guns. Our bridges and our Thames Embankment were practically doomed. Tram lines would be insisted on as certainly as they must ultimately be removed. The serpentine power of a motor omnibus was bound to kill the rigid lines of the tram, and the speed of the electric tram, even when the hideousness of overhead wires was supplanted by the conduit system, would be equalled by the power of the motor to select its own route. Having referred to the Blackwall Tunnel, the camber of the roadway of which was far too great, the author referred to City impediments to traffic, such as loading and unloading waggons, etc., empty cabs, and suggested the appointment of special traffic constables. Bearing in mind the vast importance of this traffic question, he thought the Legislature would be quite justified in appointing special mounted traffic policemen, armed with full powers to deal summarily, on the spot, with all persons, who, in their judgment, impede the traffic. Of course, these special men need only be employed in the busy and congested thoroughfares of London, and they should be under the control of the present police authorities, or of the proposed new Traffic Board. Other obstructions to traffic were the street refuges, although he did not see how they could well be removed without incurring danger in crossing wide thoroughfares. In some streets they occur too frequently, and in others they could be entirely dispensed with. In watching the effect of these refuges we could see how frequently their presence impeded, and how much injury they did to locomotion. Certain persons took up more than their share of the street areas for carts and waggons. Parcel delivery offices, and music halls and theatres at once suggest themselves as instances of this. Or take, for example, the surroundings of Covent Garden Market. Another little relief might be secured by "moving on" pedestrians at points where they obstruct the traffic. At places of public resort exit was impeded on ordinary occasions by the crawling propensities of the British public. The first to descend a staircase or to use a corridor should be hastened on, and thus a theatre or a music hall could be emptied in half the time now occupied. Then visitors to theatres and music halls were allowed to occupy the footways while waiting to get into these places of amusement. If a bookstall projected a few inches over the footway in Charing Cross-road the owner was summoned at the police-court, but theatre and music-hall proprietors might for hours occupy nearly the whole of a long length of footway for their visitors, while ordinary passengers were driven into the roadway at considerable personal risk. The traffic, both vehicular and pedestrian, was impeded, and all because the authorities, who were so keen in other matters would not compel the proprietors referred to either to open their doors earlier or face action taken to prevent obstruction. The formation and construction of roadways must always be an important element in the traffic question. He had referred to the Blackwall Tunnel as a modern example of excessive camber, and the Advisory Board of Engineers, of course, fully understood the mischief that arose from this overcambering. The drivers naturally keep to the centre of the roadway as much as possible, and hence the blocking which would otherwise not occur. "Uniformity of material" was another matter which had a bearing on the subject. Macadam, asphalt, granite, pitching, granite cobbles, and wood of various kinds crop up in a single mile of roadway; some of it was well laid on good foundations, some was not; some of it was always under "repair," some was repaired and "finished off" with what was euphemistically termed "hoggin," which material was converted into mud after a few days' traffic had been on it. Some of the granite pitching had become "polished granite" by effluxion of time; some of the wood was "hard," and some was not; and some surveyors knew how to construct a macadam roadway, and some did not. These various little matters necessitated more frequent repair and attention, and hence traffic was unnecessarily impeded. Again, utter want of common sense and ordinary care on the part of constituted authority permitted steep gradients in roadways in slippery times to be quite unattended, and when half a dozen poor horses had fallen and the traffic stopped for a time, a cart-load of sand or gravel would be sent to the spot—where it was perfectly well known danger existed—under the charge of perfunctory workmen who took as long to spread it as their masters did to think of it.

The Board had devoted considerable attention to railways. If he were the authority wielding any powers as regards railway companies, they should not be allowed to pass a single fresh Bill until they had made their stations decent, and their carriages sufficiently lighted to enable travellers to read. The sanitary condition of many of the London railway stations was a standing disgrace to the companies, and to the sanitary authorities.

The author then dealt more closely with the Report of the Advisory Board of Engineers. One sentence in the Engineers' Report, which had reference to the widening of Euston and Marylebone roads, he heartily endorsed, and that was that, where public improvements must be carried out, proper compensation should be given for interference

with such private rights as might exist. One word as regards the proposed widths of new streets which range from 140 ft., house to house, for "main avenues," to 40 ft. or 50 ft. for "fourth-class streets," and that word was that wide streets entail correspondingly wide crossings, every foot of which increased the trouble for foot passengers; the engineers would, however, no doubt vary these widths if tramways were abolished, as, he thought, they should be. The engineers, among other suggestions, proposed a bridge across the Strand at Wellington-street, which seemed to him a feasible and not too costly scheme.

As to the report of the Commission, the Commission, on the whole, recommend the extension of tramways, and in this recommendation he thought they had made a fatal blunder.

An innocent-looking little paragraph appeared on page 47 of the Report of the Commission. It was the "Tower subway." It was for a tramway starting at Leman-street, passing under the river, and terminating at the southern approach to the Tower Bridge. If the short, shallow subway at Southampton-row cost between a quarter and half a million sterling, he should like to know what this proposed "river subway" was likely to cost.

The author touched on other matters dealt with in the Report, after which he briefly referred to the dissentient Reports of Sir Joseph Dimsdale and Sir George Bartley, and the "note" by Sir George Gibb.

In conclusion, the author said he agreed with the proposed immediate creation of a Traffic Board. The nature and constitution of that Board required most careful consideration; but its powers should be correspondingly great; and the exercise of those powers should be of such a character as to render red tape unnecessary, and appeals to legal tribunals out of the question. It should, moreover, be thoroughly independent, and outside the control of the London County Council or of other constituted authority.

He warned the London ratepayer that he is in for a thorough and almost immediate crushing expenditure on tramways, shallow subways, street widenings consequent thereon, and some other little accessories pertinent thereto. These tramways would, in his opinion, in the majority of cases, be taken up again in less than ten years from the present time, as would those now existing.

In the discussion which followed Mr. A. R. Stenning, who gave evidence before the Commission, moved a vote of thanks to the lecturer, and said that the great point of the recommendations of the Commissioners was their advice that there should be an Advisory Board to consider questions of London traffic. In his opinion, such a body should be an absolutely independent one. As to tramways, he agreed that the rigid lines impeded traffic, and that a motor 'bus carried nearly as many passengers as a tram, and that the 'bus could turn and twist about as the tram could not; but, for all that, he thought that trams outside a certain radius were advisable. By means of trams people could be brought to certain points and then transported to their destination by railway, tubes, or motor 'buses. That would be a better arrangement to having tramways along the Embankment and over the bridges. Trams on the Embankment would disfigure a great London improvement, and would not result in the good that was expected. The idea of a new thoroughfare east to west was a good one, but the cost of such a work would be great. He thought that an outer circle railway, with a radius of eight miles from the centre, would be a good thing.

Mr. H. Chatfeild Clarke seconded the vote of thanks, and said that if a Traffic Board were established omnibuses would not be allowed to use narrow thoroughfares when broad ones were available, and he agreed that the blocking of streets by vans and carts ought not to be permitted. "Dock-yards" should be provided, where carts could be backed in. He did not agree with the lecturer as to tramways, and he agreed with the Commissioners. He could not see why trams should not be largely extended on the outskirts of London, and if there were no dead ends to tramways a good deal of trouble would be avoided.

Mr. P. E. Pilditch said he certainly did not think that the London County Council should be the Traffic Board of London, and he agreed with Mr. Clarke rather than the lecturer as to tramways. Tramways would be necessary for the long arterial thoroughfares, but they would have to go through London. But he believed that at least two-thirds of the tramways suggested by the Commissioners ought not to be undertaken until motor omnibuses had shown what they could do. He did not think the motor omnibus would solve the problem; it was not cheap enough for long distances.

Sir G. Bartley, one of the Royal Commissioners, referred to the great increase in the traffic of London, which showed that small improvements would not meet the need, though, of course, they should be carried out. The only solution of the problem was to face the question of wider roads, and especially the provision of the two great avenues north and south and east and west. Of course, the expense would be great; but think of the enormous loss to Londoners in trade and commerce by not having rapid transmission through the streets. Small alterations would cost as much in the aggregate as a real facing of the problem. As to trams, while he thought it would be mischievous to have them in all the places suggested, still he believed in the usefulness of trams when the road was wide enough; he would not allow a tram unless there was room on either side of it for two lines of traffic. The streets of London were for the trade of London, and it was no use complaining about vans and carts, for if trade were kept out of London, London would cease to exist; streets must be wide to suit the requirements of the City. A Traffic Board was the beginning of the solution of the problem, but it would be disastrous for the London County Council to be made that board. The board should be absolutely independent. We should face the problem boldly; if Sir Christopher Wren's plan had been carried out London would have been a very different place, and we must do something to prevent the growing congestion, which was retarding the progress of the City.

On the motion of Professor Robinson the debate was adjourned, and, the vote of thanks to the lecturer having been agreed to, the meeting terminated.

REGISTRATION OF ARCHITECTS.

On Tuesday evening a meeting, convened by Messrs. J. S. Gibson, G. Hubbard, and A. W. S. Cross, was held at the rooms of the Royal Institute of British Architects, No. 9, Conduit-street, to consider what further steps should be taken to carry forward the movement for registration. There were about fifty present, and Mr. J. S. Gibson was voted to the chair.

The Chairman explained that the meeting had been called to consider the course of procedure to be pursued. The necessity for it arose really out of the meeting held on June 19 of the members of the Institute Registration Committee, who were in favour of the statutory qualification of architects. At that meeting there was a considerable number of representatives of the allied societies and others. It was felt by the members of the provinces that some steps should be taken by London architects to form a committee of London men to carry the movement forward, and the following resolution was carried:—"That an organisation be formed for the purpose of furthering the Bill adopted by the Registration Committee of the Royal Institute of British Architects, and that an executive be formed consisting of the Presidents and appointed representatives of each of the allied societies and an equal number of London members of the Royal Institute of British Architects who are in favour of the statutory qualification of architects, and that the London members now present are appointed and requested to call such meeting." It was common knowledge that after this meeting the election of the Council for the session took place, with the result that a number of the old members were not re-elected. The new Council then appointed a Registration Committee to still further investigate the subject, and this committee had held meetings and carried forward the business as rapidly as they had been able. At the same time, they had this resolution to deal with, and it was felt by those who had convened the meeting that it would be well if they could ascertain from a considerable number of representative members of the Institute both in London and the provinces whether at the present juncture they would allow their names to be brought forward to represent the registration cause on the Council for the forthcoming year. They had a number of replies from gentlemen who would allow their names to be put forward. He might say without breach of confidence that the sub-committee appointed by the Council had taken a considerable amount of evidence, and hoped to be able to report within a fortnight, and therefore it was a question whether it would be desirable to bring the names forward, or whether they ought not to allow the house list to go forward, as in previous years, and take no action. Personally, he had a strong feeling that, as this sub-committee had nearly concluded its labours, and was in a position to report to the Council on a certain line of action, which he hoped would commend itself to the majority of the Institute, that it would be impolitic and would jeopardise the whole success of the movement if they as registrationists did anything to set at enmity those members of the Institute whom they all respected and liked, and who had done a great deal for the Institute. He did not think they ought to set out on any electoral campaign merely for the purpose of placing on the Council a majority of registrationists, and he thought it would be better if they merely suggested to the Council that they should place on the house list the names of several well-known advocates of registration. He thought it would simplify matters if they divided the business of the meeting into two parts. First, they should consider whether they should give effect to the resolution of June 19; and, secondly, whether they should select a list of gentlemen and suggest to the Council that they might be placed on the house list. It might be construed into a menace to the present Council if an organisation was formed at the present moment for the furthering of a certain Bill, and he must say that it had been evident right through the session that the Council had honestly tried to deal with the matter of registration to the best of its ability.

A speaker said that if the present Council was really in earnest in taking up the matter they ought not to do anything to interfere with them. If that meeting made a suggestion for names to be placed on the house list, unless it was notified in some way members would not know who were in favour of registration and who were not.

Mr. Leonard Stokes said he received a card for the meeting, and, being interested in the question of registration, he came. He now understood that it was a meeting of those in favour of registration, and, as they were going to settle procedure, he had better retire, for he did not wish it to be said that he was a wolf in sheep's clothing.

Several other members intimated that they also were interested in the question, but were not prepared to say they were in favour of registration; but

The Chairman said they welcomed the presence of all those interested.

Mr. Maurice B. Adams said he would be sorry to pledge himself to any proposals they might make, and would not like to participate in the meeting if he was compromising himself. He was glad to hear the Chairman say that the Council was dealing with the matter on honest and straightforward lines, for that was the only way in which it ought to be dealt with. He certainly thought it would be premature for anything to be done by that meeting in view of the early report of the sub-committee appointed to deal with the matter, and he personally would view any action with a certain amount of doubt. He wanted to arrive at an opinion, but first of all he wanted to hear what the Council had to say.

The Chairman said that officially the Council had no cognisance of that meeting.

Mr. Hubbard said the sub-committee appointed by the Council consisted of four in favour of registration and four against, and the four against had treated the

question in a perfectly fair and open manner. He was doubtful if they carried out the instructions of the resolution of June 19 whether they would not do their cause harm, and accordingly he moved :—"That the consideration of the resolution of June be deferred."

Mr. Cross seconded the motion, and said that they who were on the sub-committee, of course, had knowledge which they could not communicate, but they confidently hoped that a measure satisfactory to both sides would ultimately result from their deliberations.

Mr. Middleton said they ought to follow those who were behind the scenes. He could assure the meeting that, if the Royal Institute of British Architects brought forward a satisfactory Bill, the Bill being put forward by another society would be dropped.

The Chairman remarked that it would be a comfort to know that if a Bill was laid before Parliament they would have the support of the major portion of the architectural profession in the endeavour to carry it through.

Mr. B. J. Capell asked if they could not have some statement made showing the advantages and disadvantages of registration. He was pretty well posted up in the case of the registrationists, but he wanted to know what the anti-registrationists had to say. He knew with regard to registration that they would be in the same boat as the plumbers and sanitary inspectors and so on, but there must be something on the other side which he had not heard.

Mr. Bonner asked how the sub-committee had decided as to who they should get to give evidence.

The Chairman said the sub-committee took the evidence of well-known men in London and the provinces, both in the Institute and outside, and had done their best to arrive at the most comprehensive knowledge of the question of registration as to its effect on architects. He had not the slightest doubt but that the whole of that evidence would be available to the members of the Institute, and he did not think that that meeting was the proper time to go into the origin and history of the question.

The motion was then carried.

Mr. Middleton said he considered it would be unwise to enter into an electoral campaign, and he moved a resolution to the effect that a list of names be placed before the Council with the suggestion that they might make a selection of some of those who were in favour of the statutory qualification of architects to be placed on the house list.

Mr. Leonard Stokes thought that if it was merely a suggestion the Council would welcome it.

Mr. Gilbee Scott seconded the motion.

Mr. D. Blow said he took it there would be no circular sent round as to who they should vote for, which was a course he considered most derogatory.

The Chairman said he was of opinion that the selection should be left to the Council.

Mr. Cross said he honestly thought the Council would meet them liberally in the matter.

Mr. R. Stark Wilkinson deprecated any action being taken in view of the early report of the sub-committee, and proposed an amendment to the effect that the selection of names be deferred until after the sub-committee had reported.

Mr. Maurice B. Adams seconded the amendment, and pointed out that many of them placed a great deal of importance on the opinions of such men as Sir Aston Webb, and if the report of the sub-committee came forward with the benediction of the Council it would be carried without question.

The amendment was defeated and the motion agreed to.

After further discussion it was agreed to select the names of Mr. Gibson and Mr. Perkins Pick (Leicester) for submission for election as vice-presidents. The following Fellows were nominated and voted on as suggested members of Council on the Institute House List :—Messrs. Hubbard (twenty-four votes), Cross (twenty-three), W. Flockhart (twenty-one), Woodthorpe (eighteen), Gilbee Scott (sixteen), C. E. Mallows (sixteen), L. Solomon (sixteen), Max Clarke (fifteen), and W. H. Seth Smith (fourteen). The other Fellows nominated and not selected were—E. Seward (Cardiff), H. L. Goddard (Leicester), A. W. Brewill (Nottingham), Gilliland (Belfast), T. Cooper (Birmingham), J. W. Beaumont (Manchester), and J. T. Cackett (Newcastle). Three Associates were also nominated for the House List, viz., Messrs. H. W. Wills, C. E. Hutchinson, and G. A. T. Middleton, and the first two were selected for submission.

The meeting then terminated.

Fifty Years Ago.

FROM THE *Builder* OF MARCH 15, 1856.

METROPOLITAN IMPROVEMENTS.

IT is rather singular, that while such a vast number of suggestions on the above subject has inundated the new Board of Works since it appointment, they have all had reference exclusively to the construction of additional thoroughfares between the *eastern* and *western* parts of the metropolis. But not a thought has been given to the wretched state of our communications between the *north* and *south*, which call loudly for a portion, at least, of the attention which the authorities have to bestow on metropolitan improvements.

The most urgent want of all, and at the same time the most easily remedied and at the smallest cost, is a good line of street from the broad part of the Strand to Holborn through Lincoln's Inn-fields. It is, in fact, already more than half made. Nothing more is required than the destruction of some worthless old houses in confined courts between the Strand and Carey-street, and the setting back of the few houses on one side of Great Turnstile, to complete the whole line as far as Holborn; and the site of this new street would be so valuable for offices and chambers, that the improved ground rents would cover the interest of the outlay three times over! For more than thirty years this very opening has been projected by the inhabitants of the neighbourhood, and the public have constantly been led to believe that it was on the point of being carried out. Yet to this day that magnificent area of Lincoln's Inn-fields—the largest open space in the heart of London—is suffered to remain a perfect *cul de sac*, except for pedestrians!

Illustrations.

SOME ITALIAN RENAISSANCE WORK.

1. PULPIT IN THE DUOMO, RAVELLO.

THIS pulpit in the Duomo, at Ravello (a tiny town in the mountains above Naples), is one of the finest examples of mosaic work to be found in South Italy. The carving, executed in marble, is particularly clean and perfect. Over the entrance to the stairs up to the pulpit (and not seen in the photograph) is the marble bust of the wife of the donor. A cast of this bust is exhibited in South Kensington Museum, as an example of portraiture of the period.

The maker's name, inscribed upon a panel seen at the back in the photograph, is as follows :—

"Ego magister Nicolaus de Bartholomeo de Fogia marmorarius hoc opus feci."

Another inscription above this in Latin runs as follows :—

"For love of the Virgin, Nicolaus Rufulus Siciligaita's lord dedicated this work for his country's honour. Of them were born Matheus, Urso, Jacobus too, and Maurus, Laurentius was begotten by the first named.

May this be pleasing to thee, pius Virgin, and do thou pray thy son that hereafter he may grant to them the same good heavenly gifts, when a thousand two hundred twice thirty and thrice six full years have elapsed from the birth of Christ."

The pulpit has been rather damaged at the back, and portions removed to form a Bishop's throne in the chancel.

2. PULPIT IN SAN GIOVANNI DEL IORO RAVELLO.

This pulpit is supposed to have been executed by Nicolas de Bartolomeo for this church belonging to "The Nobles of Ravello," after the completion of No. 1. But the design is so different in character that one can only believe the mosaic work to be by the same hand. This pulpit, unlike No. 1, has ancient plaques let in to form centres to the mosaic work, and the carving is much more pagan in type. The mosaic work is unfinished, and there is a legend to the effect that, when it was seen this pulpit would be finer than the one in Duomo, Nicolas was decoyed into the mountains and blinded, and that a friend filled in with fresco the unfinished portions. I was told that documentary evidence existed in Ravello as to this, but was unable to see it, although the legend is quite in keeping with the customs of this period.

3. PULPIT IN SAN LORENZO, FLORENCE.

This is from a photograph of one of the two pulpits in this church, of which the bas-reliefs in bronze are by Donatello and his pupils, Bertoldo and Bellano. They are, indeed, wonderful pieces of work, but the angles and joints of the bronze-work need repairing. The door into the pulpit is at the end, and a movable ladder is used, although these pulpits are now seldom, if ever, made use of. Donatello is buried in this church, the foundation of which dates from 394, but it was rebuilt in 1425 from the designs of Brunelleschi, the inner wall of the façade being by Michelangelo, whose design for the outside of the façade was never executed.

4. ORGAN-CASE, VALLERANO.

This organ-case, in the church of the "Madonna del Ruscello," at Vallerano, has been executed in walnut and pine "painted" from designs by Vignola.

LIONEL U. GRACE.

NEW COMIC OPERA, BERLIN.

THE illustrations of this building, which was recently completed, are reproduced from some of the numerous illustrations of it in a recent number of the *Berlin Architekturwelt*.

The theatre is designed to accommodate an audience of 1,230 persons, with an orchestra of sixty, a large stage, and twenty-five dressing-rooms, besides the necessary rooms for rehearsals, etc. The building contains sixteen different staircases—eight of these are for the use of the public, six for the scene-shifters, and two for the artistes.

The foundations presented some difficulties, as water to the depth of 5 mètres had to be pumped out and the soft ground removed before they could be laid.

The auditorium is heated by means of openings in the roof through which the warm air is admitted under pressure; the vitiated air is allowed to escape through openings underneath each tier. It is considered that the currents of air pouring downwards would, in the case of a fire, prevent the fumes from rising; this danger is also almost entirely provided against by a large opening in the roof of the proscenium, the cover of which is held down by thin fastenings which would be easily destroyed by fire, so that the fumes would then have means of escape, and at the same time the openings in the roof of the auditorium would be automatically uncovered.

There are two fire alarms in connexion with the nearest fire-station—one for the use of the public, and the other for the artistes; besides these there are, throughout the theatre, thirteen electric buttons by means of which an alarm can be given. The necessary hydrants for the extinguishing of fire are placed at intervals in the building, so that the provision against any danger of this kind is almost as perfect as it can be.

The architects have endeavoured to construct the building in a style which will conform with the purpose for which it is intended—namely, a comic opera house.

The architect for the exterior architectural treatment is Herr Biberfeld; the house is planned by MM. Lachmann & Zauber. Among others connected with the work were Herr Kuhn, engineer; Herr Brandt, who superintended the stage mechanism, and Dr. Marx, who organised the heating arrangements. The sculpture is by Herr Kretschmar.

NEW LAW COURTS, CAPE TOWN.

THIS illustration of the accepted design of the new Law Courts at Cape Town is enlarged from a small and not very good photograph of the architects' drawing, which was sent home to us; a second reproduction from a photograph of a drawing of course can never be done with an entirely satisfactory result; but we thought it better worth while to give the design by this means than not to give it at all at present, which was the only alternative.

The design is by Messrs. Hawke & McKinlay, of Cape Town. The adjudication

end to the effect
is pulpit would
mo, Nicolas was
and blinded, and
fresco the un-
that documen-
ello as to this,
ough the legend
ustoms of this

O, FLORENCE.

of one of the
which the bas-
natello and his
They are, in-
, but the angles
k need repair.
is at the end.
although these
wever, made un
is church, the
om 394, but it
he designs of
of the façade
design for the
r executed.

RANO.

church of the
Vallerano, has
ime "painted"

U. GRACE.

BERLIN.

ing, which was
ed from some
it in a recent
Farwell,
commodate an
enty-five dress-
ry rooms for
contains six-
r the scene-

e difficulties,
es had to be
and removed

y means of
ch the warm
the vitiated
gh openings
sidered that
wards would,
fumes from
entirely pre-
in the roof
which is held
a would be
t the fumes
and at the
roof of the
r uncovered.
nection with
the use of
the artistes;
ughout the
y means of
e necessary
of fire are
ng, so that
of this kind

ed to com-
which will
which it is

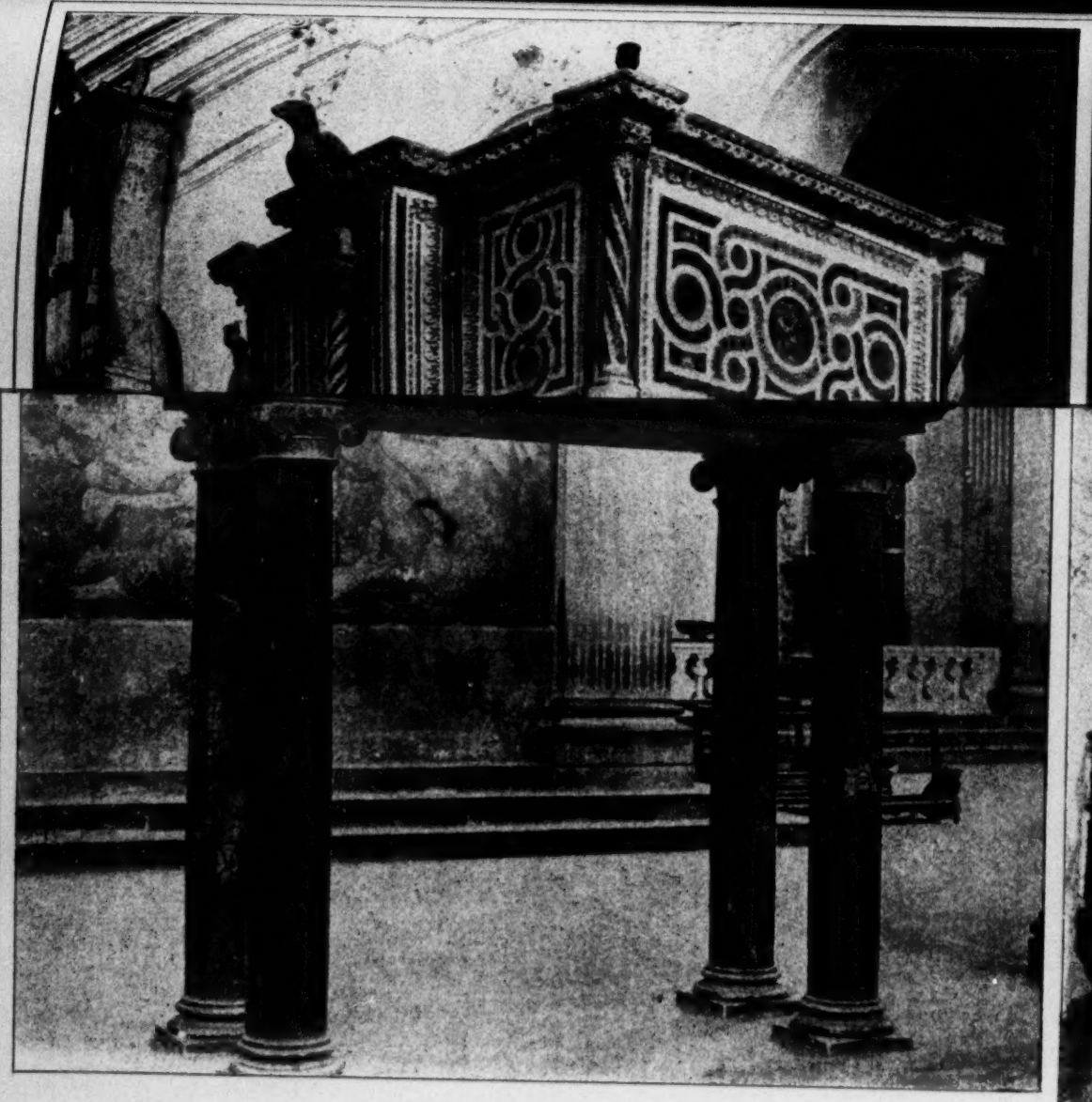
house.

r architec-
the house
& Zauber.
work were
andt, who
, and Dr.
z arrange-
retschmar.

TOWN.

ed design
Town is
very good
ing, which
roduction
course can
tistactory
rth while
an not to
the only

awke &
udication



3.—PULPIT IN SAN LORENZO, FLORENCE.

4.—ORGAN-CASE, VALLERANO.

INK PHOTO, SPRAGUE & Co., Ltd., 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

SOME ITALIAN RENAISSANCE WORK.

unfinished, and there is a legend to the effect that, when it was seen this pulpit would be finer than the one in Duomo, Nicolas was decoyed into the mountains and blinded, and that a friend filled in with fresco the unfinished portions. I was told that documentary evidence existed in Ravello as to this, but was unable to see it, although the legend is quite in keeping with the customs of this period.

3. PULPIT IN SAN LORENZO, FLORENCE.

This is from a photograph of one of the two pulpits in this church, of which the bas-reliefs in bronze are by Donatello and his pupils, Bertoldo and Bellano. They are, indeed, wonderful pieces of work, but the angles and joints of the bronze-work need repairing. The door into the pulpit is at the end, and a movable ladder is used, although these pulpits are now seldom, if ever, made use of. Donatello is buried in this church, the foundation of which dates from 394, but it was rebuilt in 1425 from the designs of Brunelleschi, the inner wall of the façade being by Michelangelo, whose design for the outside of the façade was never executed.

4. ORGAN-CASE, VALLERANO.

This organ-case, in the church of the "Madonna del Ruscello," at Vallerano, has been executed in walnut and pine "painted" from designs by Vignola.

LIONEL U. GRACE.

NEW COMIC OPERA, BERLIN.

THE illustrations of this building, which was recently completed, are reproduced from some of the numerous illustrations of it in a recent number of the *Berlin Architekturwelt*.

The theatre is designed to accommodate an audience of 1,230 persons, with an orchestra of sixty, a large stage, and twenty-five dressing-rooms, besides the necessary rooms for rehearsals, etc. The building contains sixteen different staircases—eight of these are for the use of the public, six for the scene-shifters, and two for the artistes.

The foundations presented some difficulties, as water to the depth of 5 mètres had to be pumped out and the soft ground removed before they could be laid.

The auditorium is heated by means of openings in the roof through which the warm air is admitted under pressure; the vitiated air is allowed to escape through openings underneath each tier. It is considered that the currents of air pouring downwards would, in the case of a fire, prevent the fumes from rising; this danger is also almost entirely provided against by a large opening in the roof of the proscenium, the cover of which is held down by thin fastenings which would be easily destroyed by fire, so that the fumes would then have means of escape, and at the same time the openings in the roof of the auditorium would be automatically uncovered.

There are two fire alarms in connexion with the nearest fire-station—one for the use of the public, and the other for the artistes; besides these there are, throughout the theatre, thirteen electric buttons by means of which an alarm can be given. The necessary hydrants for the extinguishing of fire are placed at intervals in the building, so that the provision against any danger of this kind is almost as perfect as it can be.

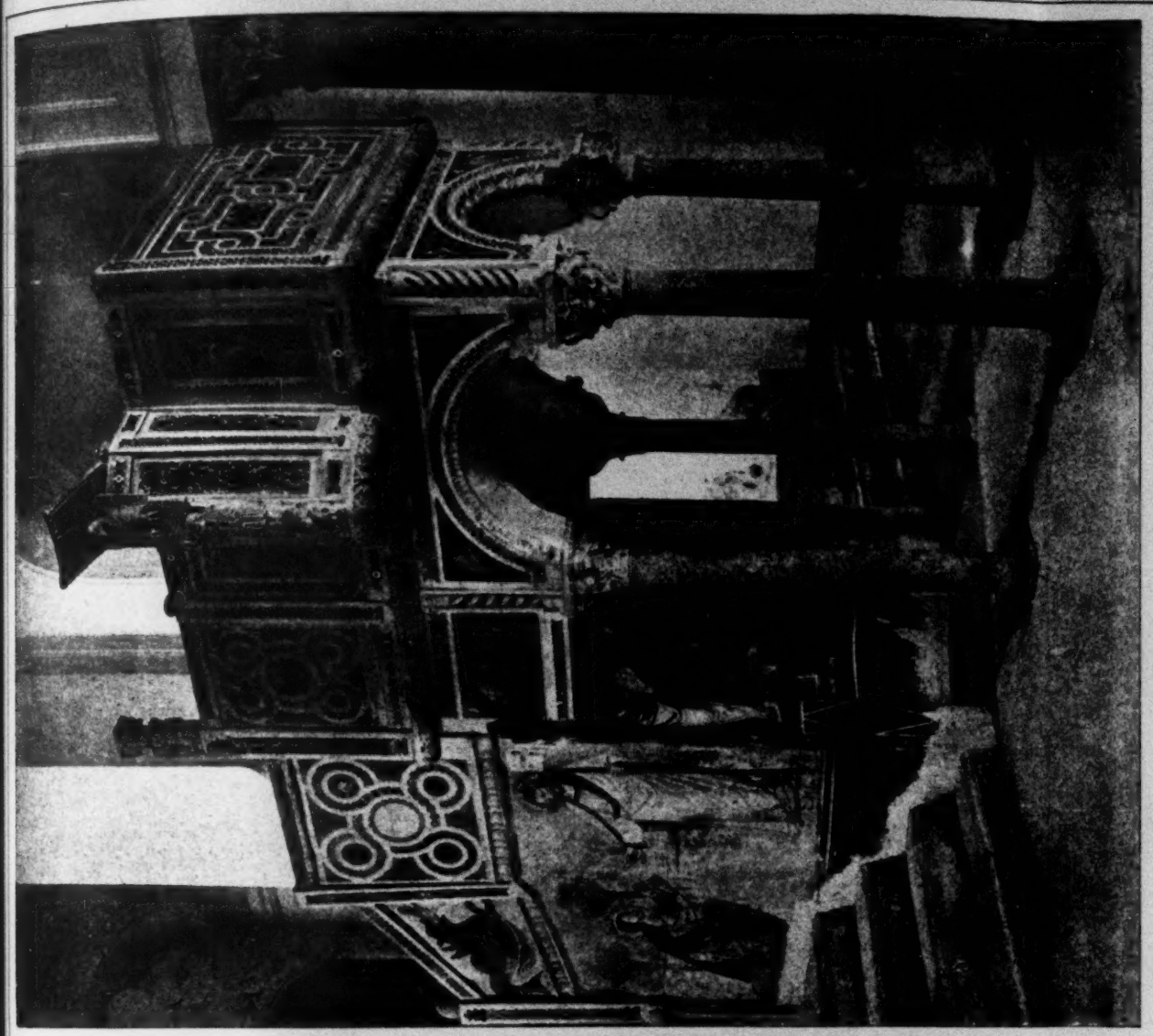
The architects have endeavoured to construct the building in a style which will conform with the purpose for which it is intended—namely, a comic opera house.

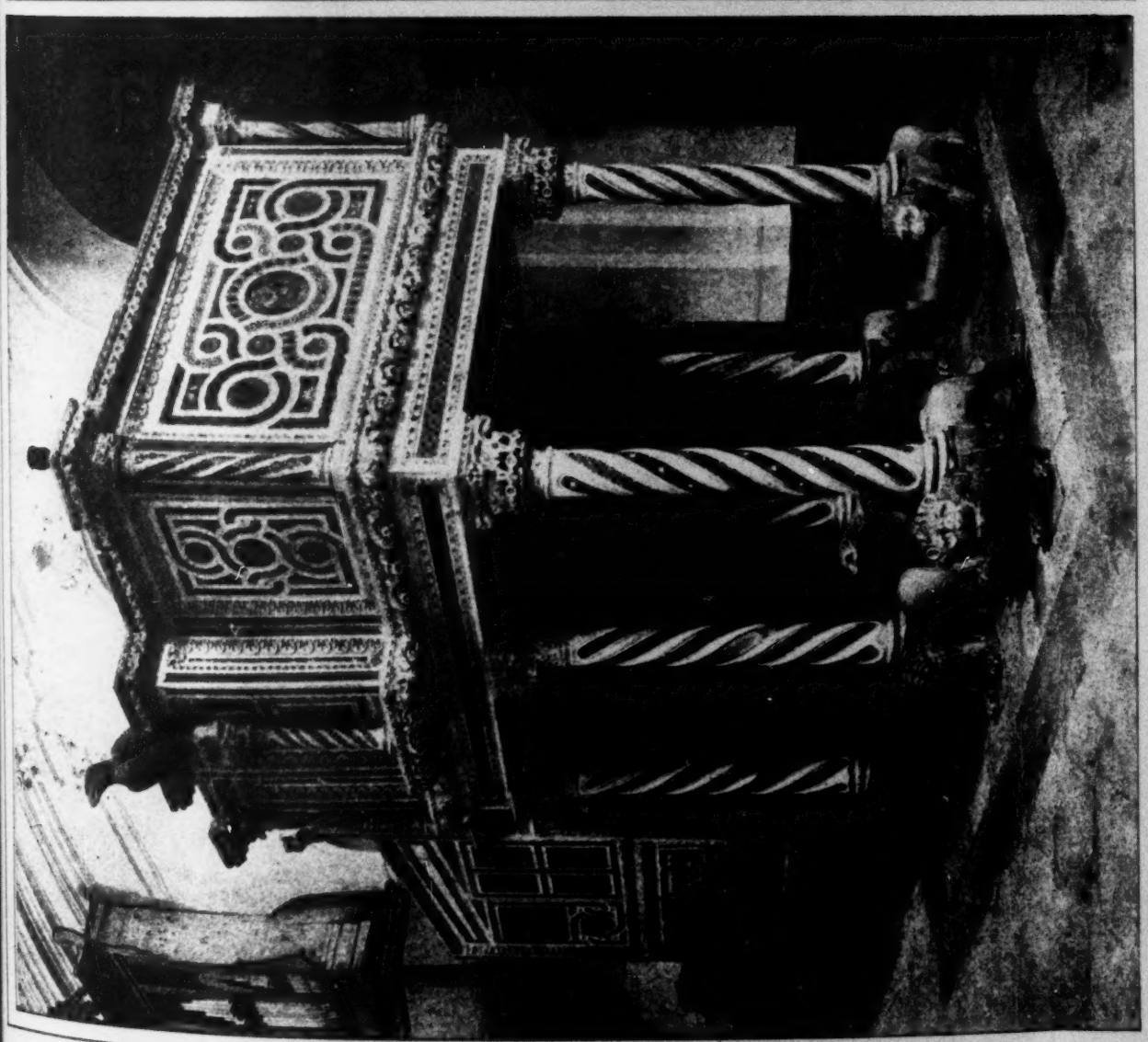
The architect for the exterior architectural treatment is Herr Biberfeld; the house is planned by MM. Lachmann & Zauber. Among others connected with the work were Herr Kuhn, engineer; Herr Brandt, who superintended the stage mechanism, and Dr. Marx, who organised the heating arrangements. The sculpture is by Herr Kretschmar.

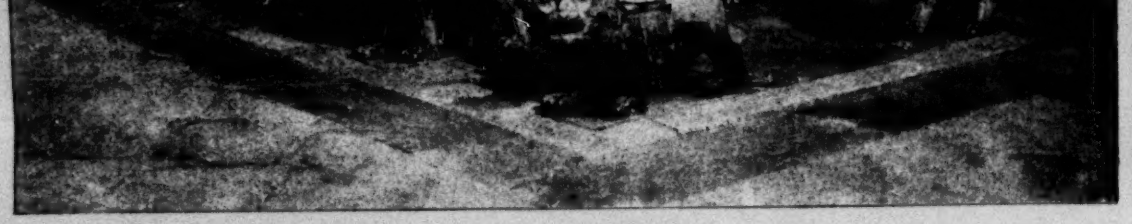
NEW LAW COURTS, CAPE TOWN.

THIS illustration of the accepted design of the new Law Courts at Cape Town is enlarged from a small and not very good photograph of the architects' drawing, which was sent home to us; a second reproduction from a photograph of a drawing of course can never be done with an entirely satisfactory result; but we thought it better worth while to give the design by this means than not to give it at all at present, which was the only alternative.

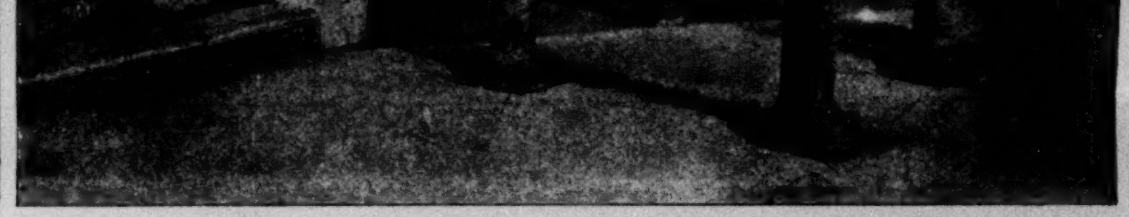
The design is by Messrs. Hawke & McKinlay, of Cape Town. The adjudication



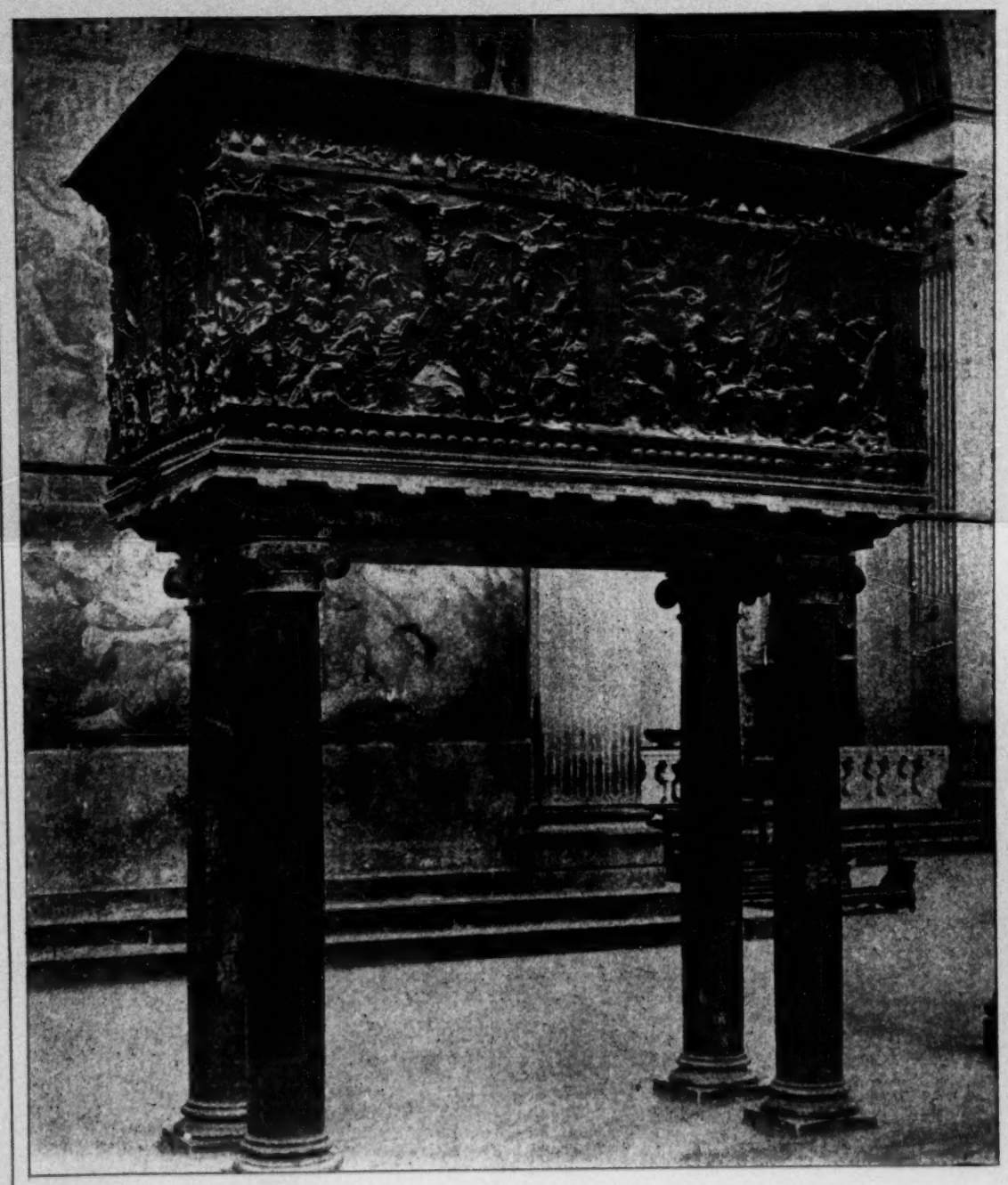




1.—PULPIT IN THE DUOMO RAVELLO (1278).



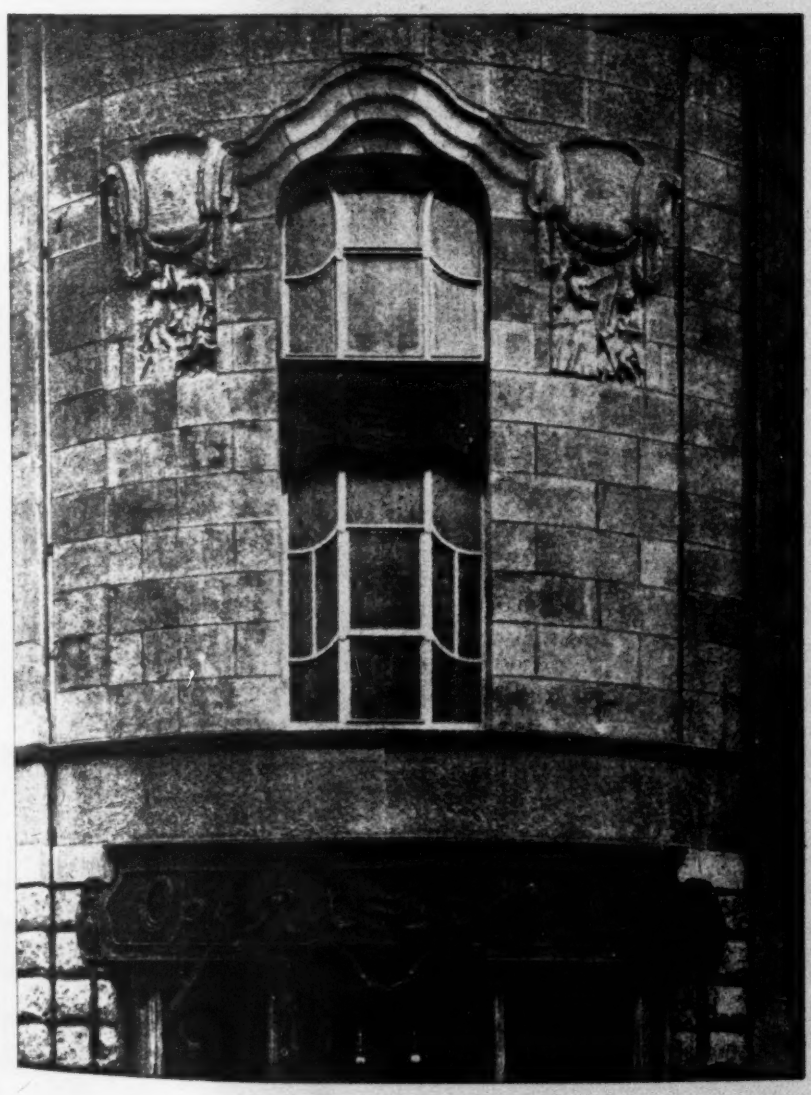
2.—PULPIT IN SAN GIOVANNI DEL TORO, RAVELLO (AROUT 1280).



3.—PULPIT IN SAN LORENZO, FLORENCE.

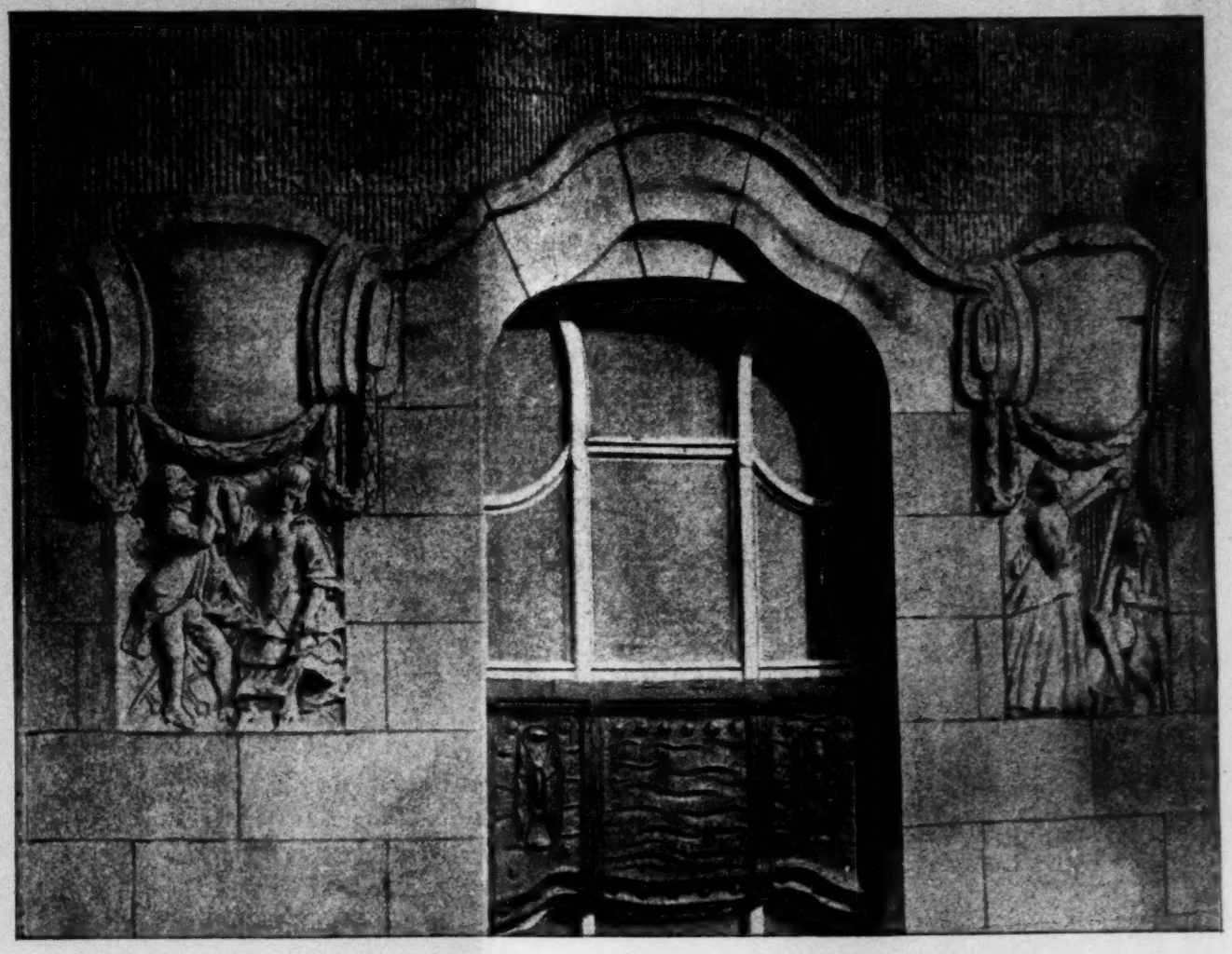
4.—ORGAN-CASE, VALLERANO.

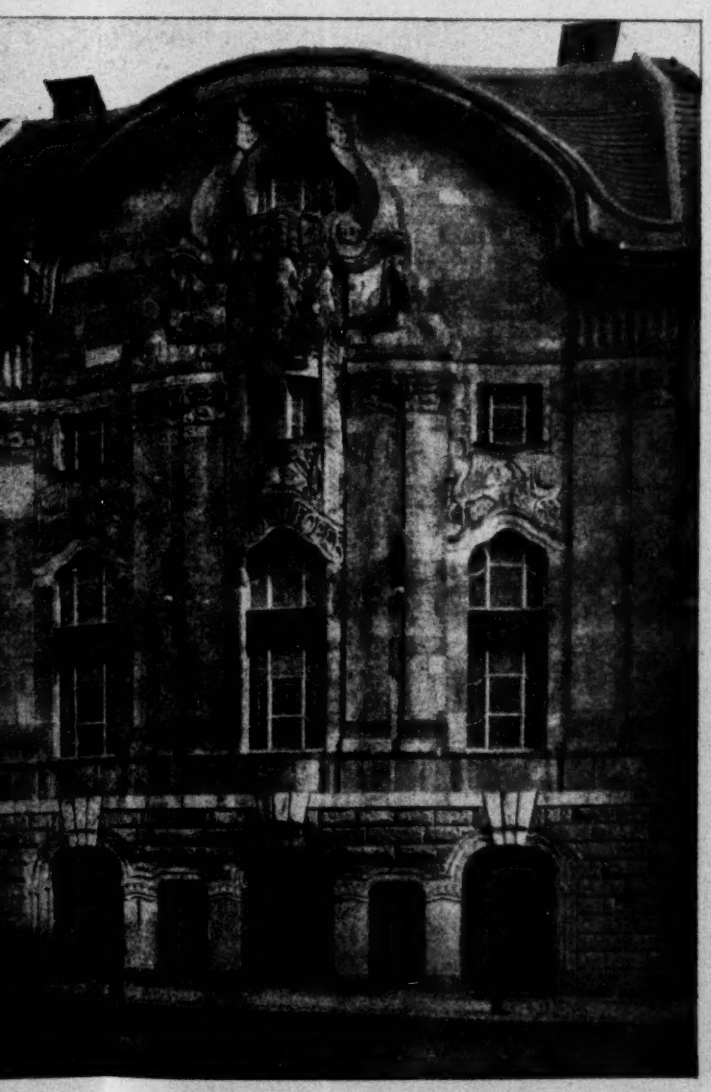
PHOTO. SPRAGUE & C° L^TD 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

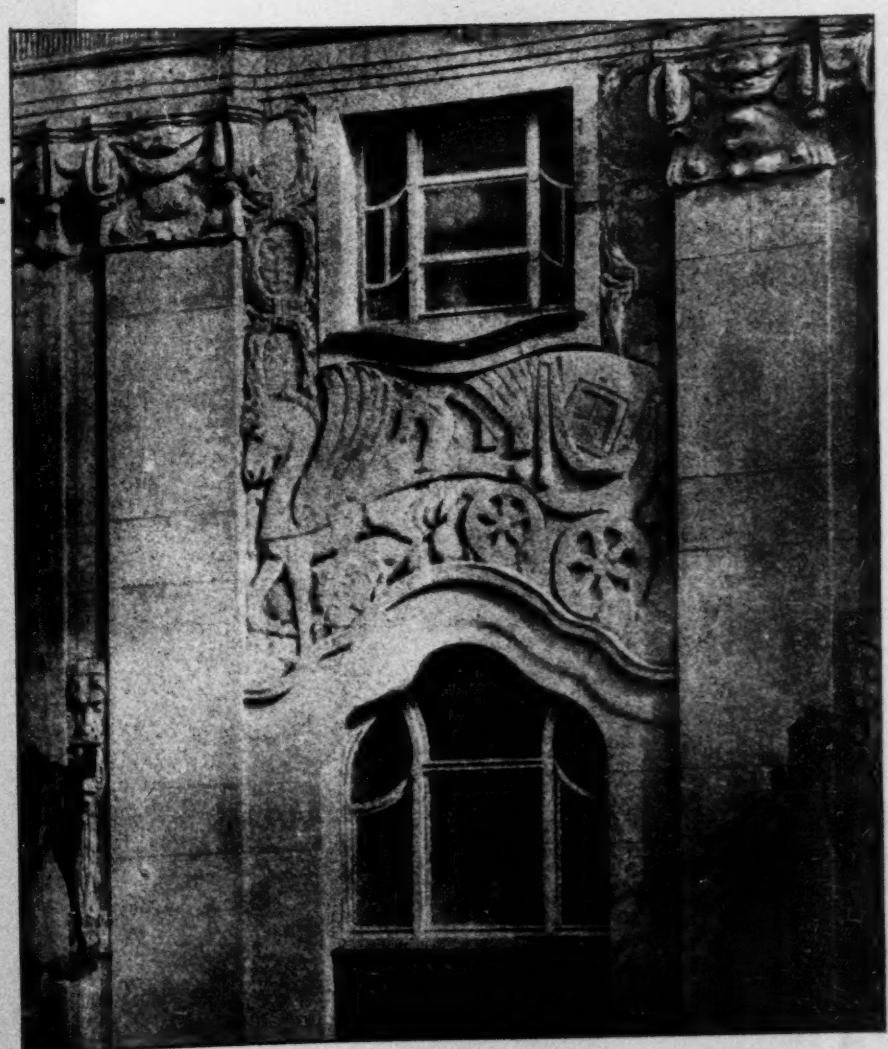


NEW COMIC OPERA BU

(Reproduced fr



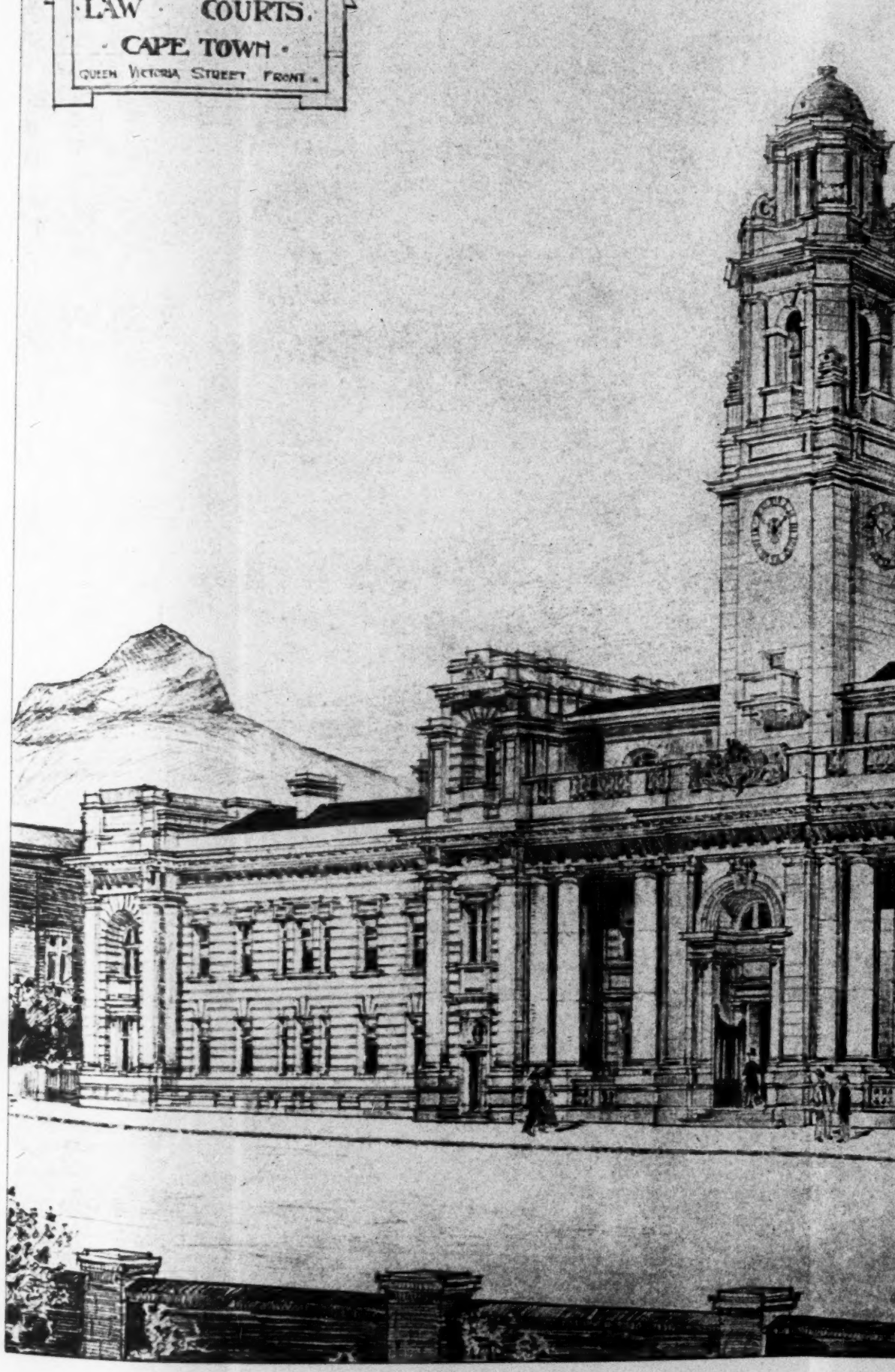




"INK-PHOTO," SPRAGUE & CO., LTD., 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

COMIC OPERA BUILDING, BERLIN.—HERR BIBERFELD, ARCHITECT.

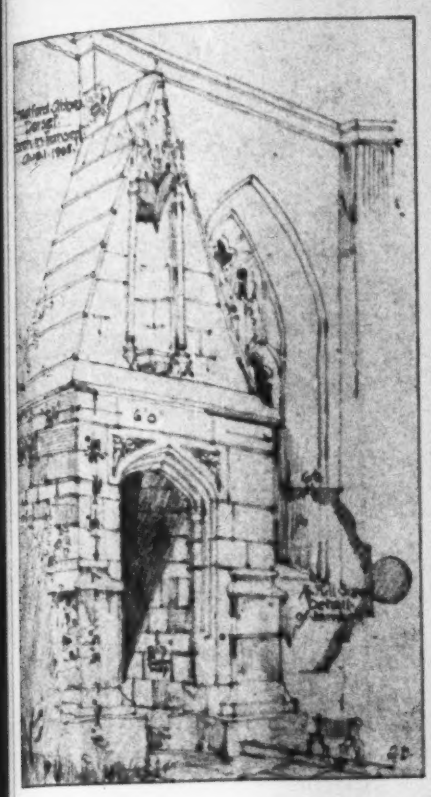
(Reproduced from the "Berliner Architekturwelt.")

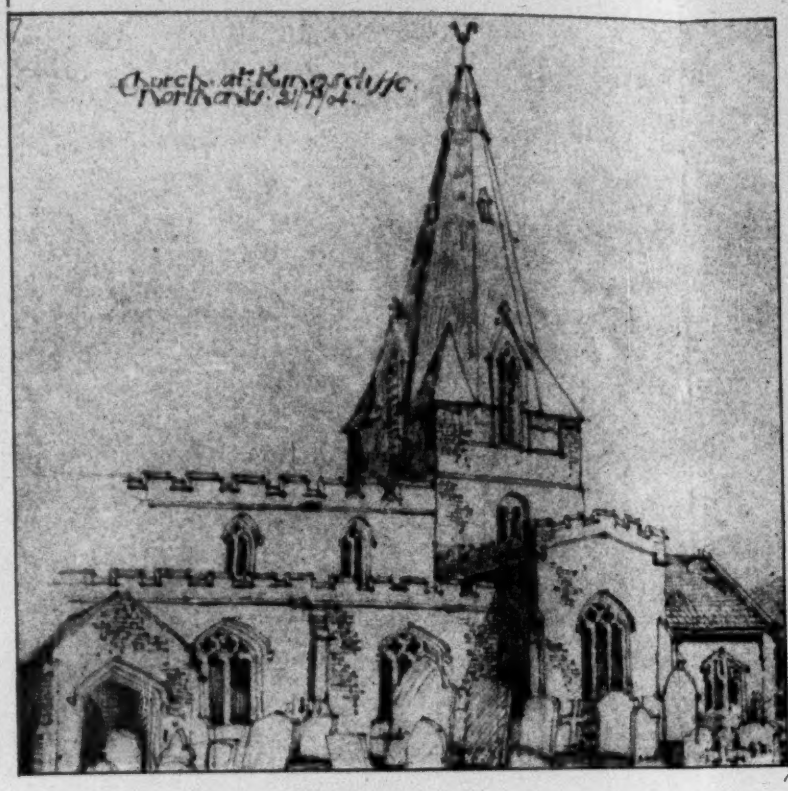


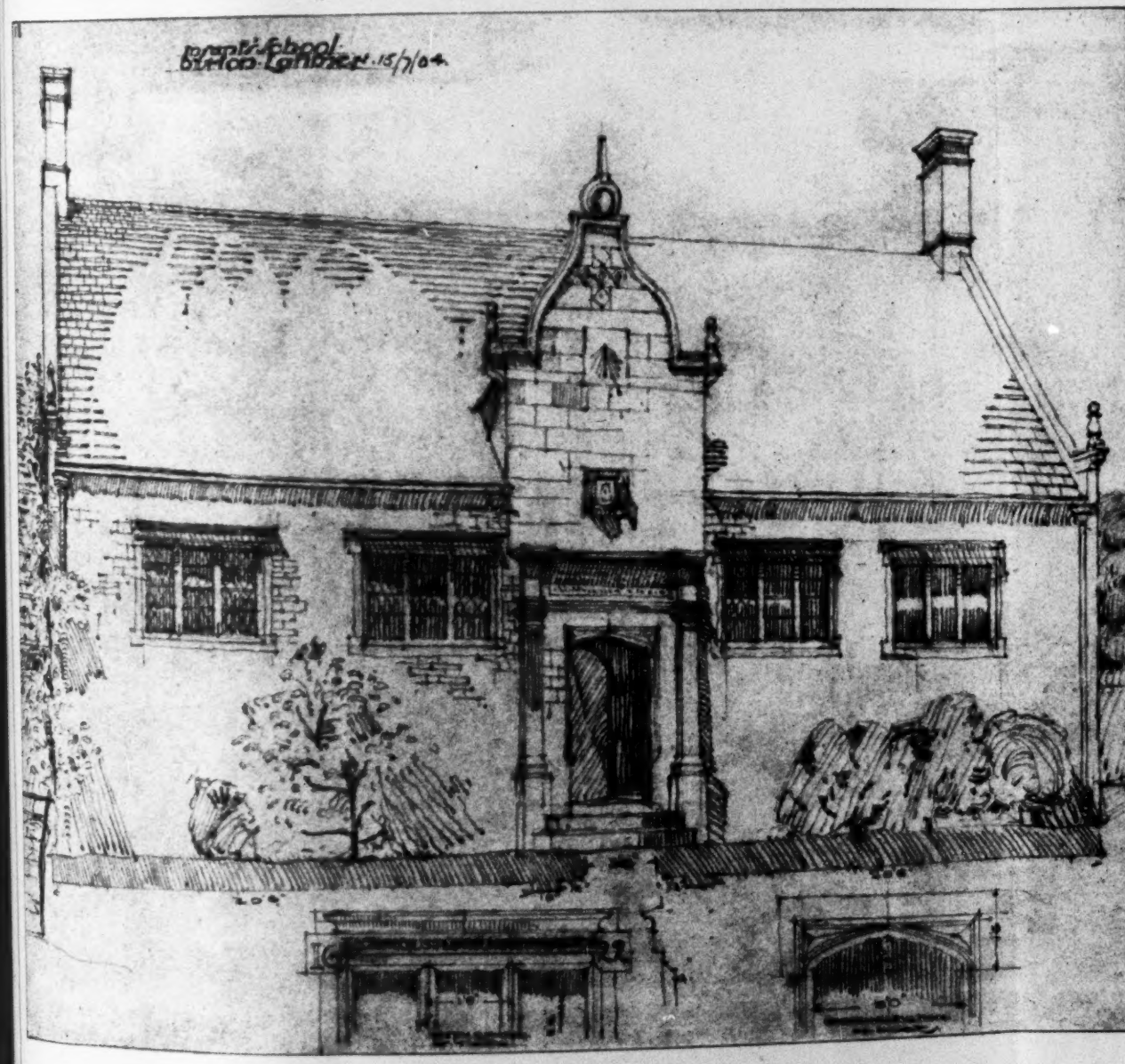
THE NEW LAW COURTS, CA

INK-PHOTO. SPRAGUE & Cº LTD 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

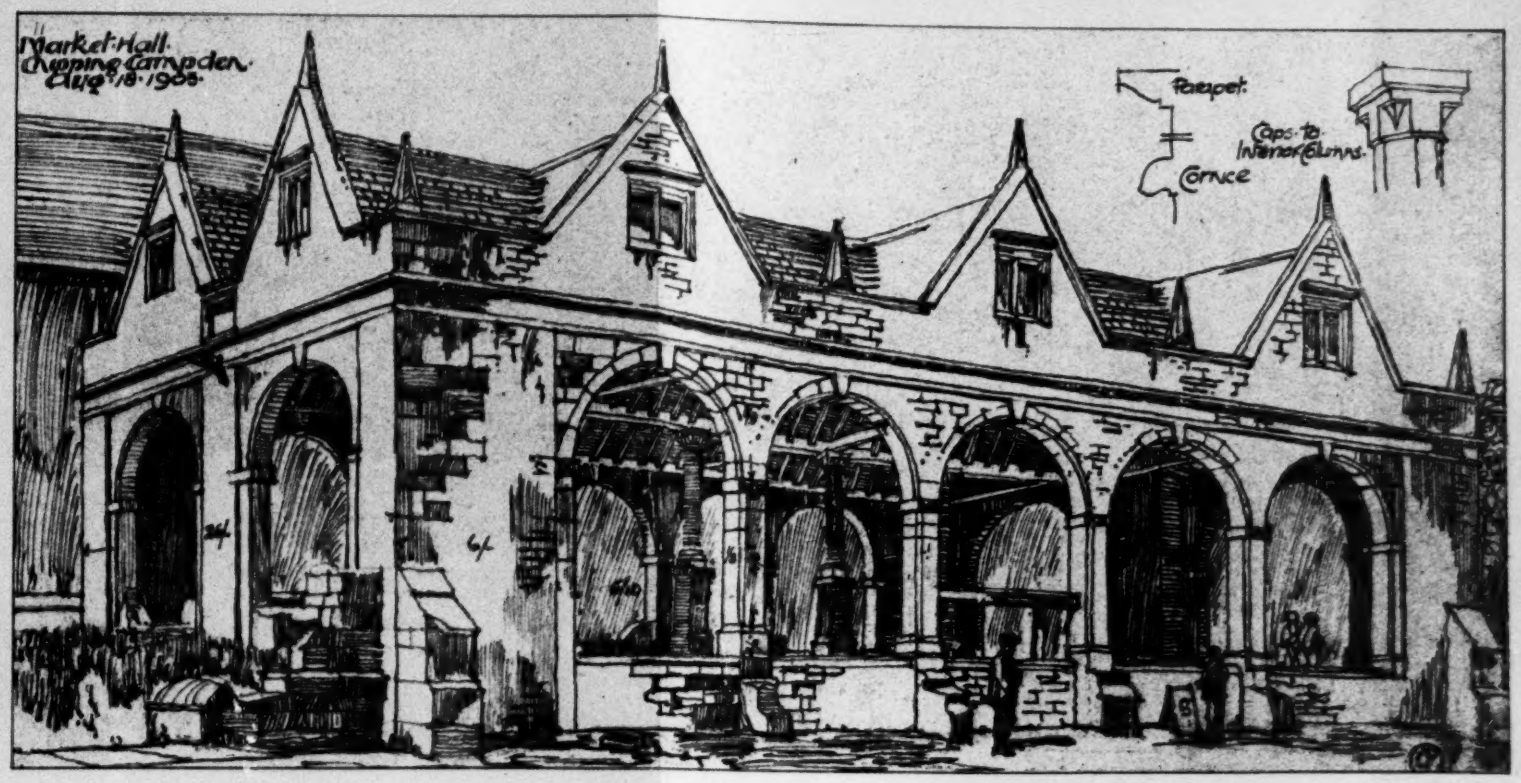
LAW COURTS, CAPE TOWN.—Messrs. Hawke & McKinlay, Architects.

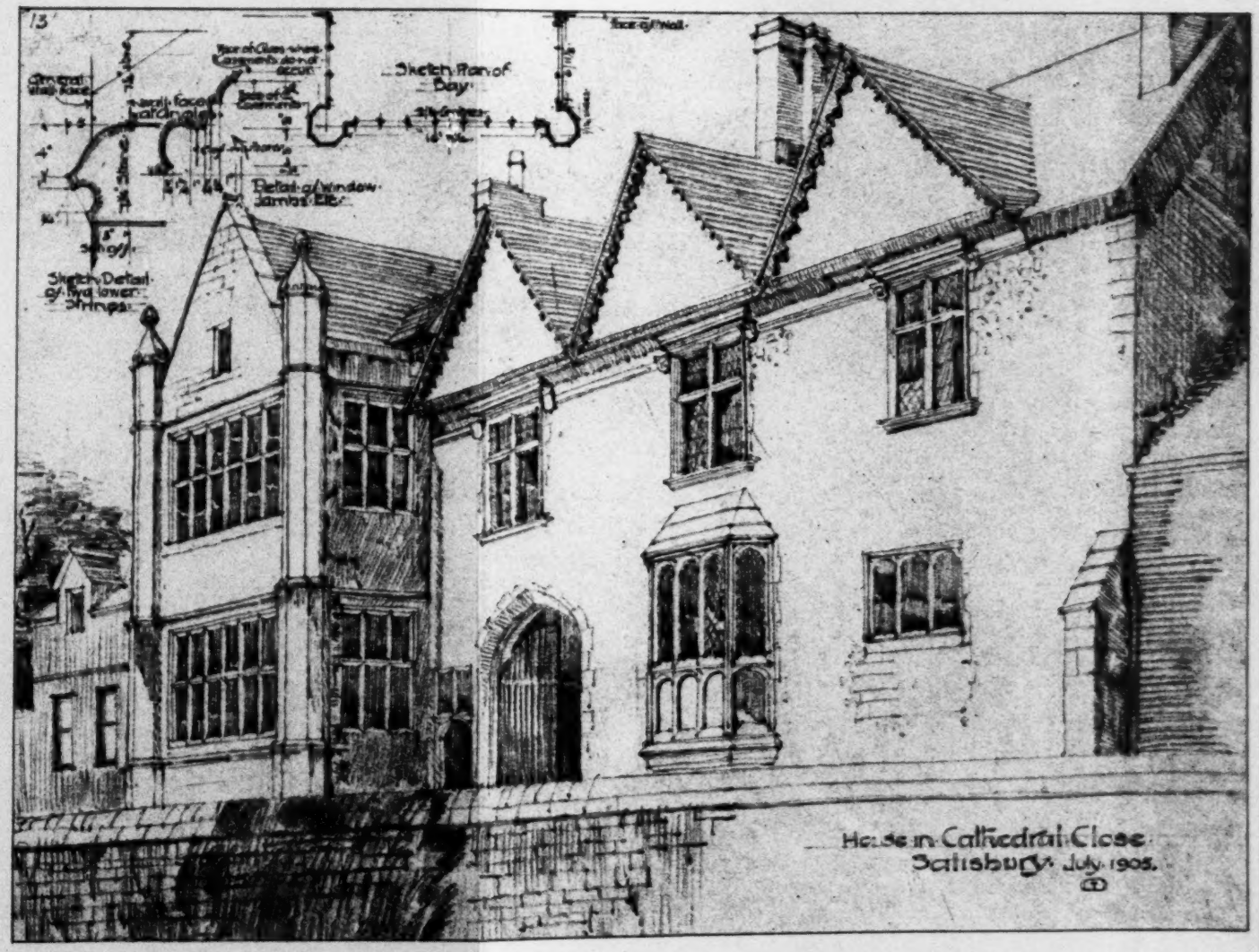






Pugin Studentship, R.I.B.A., 1906.





"INK-PHOTO" SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

SKETCHES BY MR. G. DRYSDALE.

of the competition was entrusted to a special committee appointed by Government, consisting of Sir Henry de Villiers (Chief Justice), Sir John Graham (Secretary to the Law Department), Mr. Advocate Searle, K.C., Mr. C. H. von Tyl, and Mr. Mervyn Macartney, who attended from England as professional assessor. There were forty-two competitors.

The estimated cost of the building is about 175,000*l*. Unfortunately no plan has reached us.

SKETCHES BY MR. GEO. DRYSDALE.

THESE are a selection from the sketches by Mr. Drysdale which gained him the Pugin Studentship this year at the Institute of Architects. The titles are on each sketch, and otherwise they speak for themselves.

We selected these particular sketches of small buildings rather than those of larger and more monumental works, with the object of giving subjects that have not been too much familiarised by illustration.

ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of the subscribers and donors of the Architects' Benevolent Society was held in the rooms of the Royal Institute of British Architects on Friday last week, at No. 9, Conduit-street, W., Mr. J. Macvicar Anderson presiding, in the unavoidable absence of the President, Mr. John Belcher, A.R.A.

The report of the Council was read by Mr. Percivall Currey, Hon. Secretary, and, on the motion of the Chairman, seconded by Mr. H. L. Florence, adopted. From the Report we take the following paragraphs :—

"The Council, in presenting the fifty-fifth annual report of the Architects' Benevolent Society, have to express regret that, judging by the number of claims made upon the Society, the past year seems to have been one of exceptional difficulty for many of the less fortunate members of the architectural profession. Towards the middle of the year it was found that the demands made upon the Society were beginning to outweigh the funds at the disposal of the Council, and that it was necessary to consider means by which the income could be increased. The President (Mr. John Belcher) acceded to a suggestion that he should issue a personal letter of appeal, and this was sent out to 5,280 architects practising in the three kingdoms. The President directed attention to the fact that, although this Society had been in existence for over fifty years, and was the only institution organised specially for the relief of architects or their widows and orphans, not more than 1 per cent. of architects in active practice contributed to its support. As the income had suffered in recent years from the loss of many liberal contributors, the President appealed particularly for subscriptions. Compared with the support hitherto accorded, the result of the appeal must be considered satisfactory, the subscriptions having been increased some 20 per cent., while a considerable sum has been added to the capital. The grateful thanks of the Society are due to the President for the active interest which he has taken in this matter, and it is hoped that the effect of his letter is not yet exhausted.

In connexion with the appeal, the Council wish specially to call attention to an offer of a donation of 50*l*. by Mr. Walter Emden, if nine other contributions of an equal amount are received. Mr. Emden's offer has so far been supported by Mr. William Glover, Mr. H. Chatfeild Clarke, and the Society of Architects.

The total amount of subscriptions received during the year was 615*l*. 19s. 6d. (last year 539*l*. 5s.); the donations amounted to 765*l*. 17s. (last year 143*l*. 1s.). The Society's investments were increased by the purchase of 600*l*. New Zealand Three per Cent. inscribed Stock at a cost of 531*l*. 16s. To meet the claims of applicants, it was found necessary to transfer 140*l*. received in response to the President's appeal (which was made especially to relieve current needs) from Capital to Income Account.

The amount of 1,000*l*. 3s. was distributed in grants and pensions. The number of applicants, apart from pensioners, was eighty-six, out of which eighty were granted assistance.

Through the courtesy of Mr. John Holden, the Society's hon. local secretary at Manchester, the Council have been informed that Mr. Alexander W. Mills, of Bowdon, Cheshire, an old subscriber, has bequeathed to the Society 500*l*. Further bequests of 21*l*. from the late Mr. C. Forster Hayward, and two Architectural Union Company's shares from the late Mr. H. H. Collins have also been received.

It is with great regret that the Council have to record the death of these members (Mr. Collins was also a member of the Council at the time of his death), as well as of Mr. Alfred Waterhouse, Mr. J. T. Wimperis, and Mr. G. Fowler Jones, all old subscribers.

The Council desire to express their appreciation of the kindness of the Committee of the Architectural Association Students' Smoking Concert in devoting part of the proceeds of the concert on February 2 to the funds of the Society, the amount received being 12*l*. 12s.

To meet the wishes of corporate bodies, a resolution will be submitted by which such bodies may be represented, subject to the fulfilment of certain conditions, on the Council and at general meetings by their Presidents for the time being, and granted the same privileges with regard to the recommendation of applicants for relief as possessed by individual members.

Owing to the absence of Mr. Graham C. Awdry from London, Mr. Edward Greenop kindly undertook the auditing of the accounts with Mr. Sydney Perks.

Mr. S. D. Kitson, M.A., has consented to act as Hon. Local Secretary at Leeds.

The following gentlemen, being the five senior members, retire by rotation from the Council—Mr. Edwin T. Hall, Mr. Lewis Solomon, Mr. Wm. Woodward, Mr. H. H. Collins (deceased), and Mr. T. E. Collcutt. To fill the vacancies caused by these retirements the Council have the pleasure to nominate Mr. Arthur Ashbridge, Mr. Walter Emden, Mr. Reginald St. A. Roumieu, Mr. H. Chatfeild Clarke, and Mr. Alfred Saxon Snell. . . ."

The Chairman said he hoped that the offers made to give certain sums of money in aid of the Society's efforts, provided that other contributors could be induced to give the same amount, would not be forgotten. What had once been done could be done again, if members put themselves to a little personal sacrifice.

On the motion of Mr. A. Ashbridge, seconded by Mr. G. Scamell, a vote of thanks was accorded to the retiring members of Council.

Mr. A. T. Taylor then moved, and Mr. Osborn C. Hill seconded, and it was agreed, that the Council for the ensuing year of office be elected as follows:—President, the President of the Institute; Vice-President, Mr. Wm. Glover; Council, Mr. Rowland Plumbe, Mr. G. T. Hine, Mr. Ambrose M. Poynter, Mr. Wm. Grellier, Col. R. W. Edis, Mr. H. L. Florence, Mr. G. B. Bulmer, Mr. F. W. Hunt, Mr. W. L. Spiers, Mr. Arthur Ashbridge, Mr. Reginald Roumieu, Mr. Walter Emden, Mr. H. Chatfeild Clarke, and Mr. Alfred Saxon Snell.

On the motion of Mr. Christopher, seconded by Mr. Rowland Plumbe, a hearty vote of thanks was accorded to Mr. W. Hilton Nash, Hon. Treasurer, and he was re-elected to fill that office again.

Mr. Nash, in response, said it was a great source of satisfaction that they had been able to give away the largest sum of money in one year that they had ever done in the history of the Society, *i.e.*, 1,000*l*., and, at the same time, to have increased the capital. The total capital now represents between 14,000*l*. and 15,000*l*. They ought to try and influence new members to join the Society, especially as only about 1 per cent. of the architects of the United Kingdom were subscribers, and only about 6 or 7 per cent. of the subscribers were members of the Institute.

Mr. Currey was re-elected as Hon. Secretary, and a vote of thanks was accorded to him for his past services. In reply, he said that, if only 2 per cent. of the members of the profession would subscribe, the Society would have an income of nearly 1,000*l*. a year. The thanks of the Society were due to Mr. Dircks, Assistant-Secretary, for his work on behalf of the Society.

On the motion of Mr. W. Grellier, seconded by Mr. Walter Spiers, the auditors (Messrs. Sydney Perks and E. Greenop) were thanked for their services and re-elected.

The following resolution was then moved by Mr. Nash :—

"That the following be inserted after By-law No. 7 :—'Societies and corporate bodies who are now or may become annual subscribers of not less than ten guineas, or donors in one sum of not less than fifty guineas, shall be entitled to be represented on the Council by their President or Chairman for the time being, who may also vote at all general meetings, and shall be entitled on behalf of his Society to the same privileges as those of individual donors or subscribers.' And to renumber consecutively the subsequent by-laws."

Mr. Walter Spiers seconded, and the motion was agreed to.

On the motion of Mr. Florence, seconded by Mr. Nash, the thanks of the Society were accorded to the Institute for the use of the rooms.

The Chairman, in reply, said that, whether the Institute remained at No. 9, Conduit-street or got new premises elsewhere, they would esteem it one of their privileges to accord the use of their rooms to the Society.

On the motion of Mr. J. D. Crace, seconded by Mr. Currey, the Chairman was thanked for presiding, and, the Chairman having replied, the meeting terminated.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Sir E. Cornwall, M.P., presiding at the commencement of the proceedings.

Chairmen.—The first business was the election of new chairmen for the ensuing year, as follows:—As Chairman, Mr. Evan Spicer; as Vice-Chairman, Mr. Henry Ward; and as Deputy-Chairman, Dr. Forman.

New Committees were also elected. The new Building Act Committee consists of the following councillors :—

W. Davies, F. Goldsmith, W. Goodman, R. W. Granville-Smith, H. J. Greenwood, G. A. Hardy, Capt. the Hon. Fitzroy Hemphill, H. Jephson, John Lewis, R. C. Phillimore, John Smith, Hon. Arthur L. Stanley, H. R. Taylor, G. J. Warren, Edward White.

The new Works Committee is as follows :—

T. H. W. Idris, Lewen Sharp, Edward Smith, A. M. Torrance, W. Davies, D. S. Waterlow, Lord Welby.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Camberwell Borough Council 3,371*l*. for housing purposes; Stepney Borough Council 10,000*l*. for electric lighting; and Stoke Newington Borough Council 9,500*l*. for street improvement.

Theatres, etc.—The Theatres and Music-halls Committee recommended as follows :—

"A building to be known as the Hammersmith Public Baths, and to be erected on the west side of Lime-grove, Hammersmith (Mr. J. E. Franck for Hammersmith Borough Council).

The building of the Welcome Club and the construction of the "Austrian Salt Mine" at the London Exhibitions, Earl's Court (Mr. A. O. Collard).

A building to be known as the Parochial Hall, and to be erected at Allardyce-street, Brixton (Mr. C. E. Hewitt).

Reinforced granolithic steps, proposed to be provided at the Putney Hippodrome, Gardener's-lane, Putney, and proposed arrangements for ventilating and heating the premises (Mr. F. W. Hingston).

A heating chamber in the stage basement, and the provision of four radiators on the stage of the Royalty Theatre, Dean-street, Soho (Messrs. Smee & Cobay).

Certain alterations proposed to be carried out in connexion with the exits from the Royal Victor Hotel (late Royal Victor Music-hall), Old Ford-road, Bethnal Green (Mr. E. Stephens)."

The proposals were agreed to.

The Council adjourned at 7.30 p.m.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses :—

Lines of Frontage and Projections.

Norwood.—A town hall building upon a site abutting on Brixton-hill and Acre-lane, Brixton (Messrs. Warwick & Hall).—Consent.

Southwark, West.—A wall on the western side of Gravel-lane, Southwark (Messrs. Nevinson & Newton for Messrs. Stevenson & Howell, Ltd.).—Consent.

Lewisham.—Projecting one-story shops in front of Nos. 33 to 45 (odd numbers only) inclusive High-street, Lewisham (Messrs. Kennard Brothers for Messrs. Chieseman Brothers).—Consent.

Strand.†—A projecting sign in front of No. 32A. St. James's-street (Mr. R. H. Kerr for Messrs. Sandow, Ltd.).—Consent.

Paddington, North.—Re-erection of Nos. 8, 9, and 10, Paddington-green, Paddington (Messrs. Bourchier, Burmester, & Galsworthy).—Consent.

Hammersmith.—That the application of Mr. L. W. Williams for an extension of the period within which the erection of a projecting lavatory addition and steps in front of "Seion" Welsh chapel, Southerton-road, Hammersmith, was required to be commenced, be granted.—Consent.

St. George, Hanover-square.—Retention of an iron and glass shelter in front of the porch of the Coburg Hotel, Carlos-place, Grosvenor-square (Mr. E. H. Watts for the Coburg Hotel, Ltd.).—Consent.

St. Pancras, South.—A bay-window, five stories in height, in front of No. 14, Fitzroy-square, St. Pancras (Mr. M. M. Smith).—Consent.

Dulwich.—A motor-car shed of a temporary character at the rear of No. 100, Alleyn-road, Dulwich, to abut upon South Croxted-road (Messrs. J. Harrison & Co. for Mr. Barnet).—Consent.

Marylebone, West.—Retention of a range of luncheon and store sheds at Lord's cricket ground, abutting upon St. John's Wood-road, Wellington-road, and Wellington-place, St. John's Wood (Mr. F. E. Lacey).—Consent.

Hammersmith.—A building upon a site abutting on Blythe-road and Addison-gardens, West Kensington (Col. E. Clarke for Mr. F. Smiths).—Refused.

St. George, Hanover-square.—An iron and glass porch in front of No. 6, Chesterfield-street, Mayfair (Messrs. Hindley & Wilkinson for Mr. R. G. Behrens).—Refused.

Finsbury, Central.—The retention of a wall in the rear portion of the one-story shops in front of Nos. 190 to 208 (even numbers only) inclusive, Pentonville-road (Mr. C. E. Pettitt for Mr. T. Lilley and Messrs. Lilley & Skinner, Ltd.).—Refused.

Strand.—Projecting lettering in front of No. 56, Charing-cross (Liverpool, London, and Globe Insurance Company).—Refused.

Hackney, North.—The retention of a shed at the flank of No. 17, Bethune-road, Hackney, abutting upon St. Kilda's-road (Mr. H. Willmott).—Refused.

Width of Way.

City of London.†—A warehouse building on the northern side of Tenter-street, Moorfields (Messrs. Gregg & Detmar for Messrs. Raphael Tuck & Sons).—Consent.

Kensington, South.—Two studio buildings on the southern side of Logan-place, Kensington (Mr. G. H. Jenkins for Professor G. Moira and Mr. F. L. Jenkins).—Refused.

Lines of Frontage and Space at Rear.

Poplar.—Two houses on the southern side of Mellish-street, Glengall-road, Poplar, and a building on the northern side of Glengall-road, to abut upon the western side of Mellish-street (Messrs. J. & W. Clarkson for Mr. A. E. Ricks).—Consent.

Width of Way and Construction.

Brixton.—A wood and iron cart-shed upon a site on the south-west side of Eastcote-street, Lambeth (Messrs. J. Harrison & Co. for Mr. Cornell).—Refused.

The recommendations marked † are contrary to the views of the local authorities.

ARCHITECTURAL SOCIETIES.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—At the rooms of this Society on Thursday, the 8th inst., Mr. H. Phillips Fletcher read a paper on "The St. Louis Exhibition," Mr. G. B. Bulmer in the chair. The lecturer said:—"It is possible that some few of us are but dimly aware of the great event which the World's Fair at St. Louis commemorated. It was the centenary of the purchase of the Louisiana territory from Napoleon by the United States Government. The first organised action for the holding of the Exposition was taken in 1898, and it was determined, in the typical American fashion, to make it the 'biggest' ever held in the history of the world; 15,000,000 dols. was the amount of capital which was proposed for the financing of the enterprise; 5,000,000 dols. of this was raised by public subscription from the citizens of St. Louis, 5,000,000 dols. by the issuing of City bonds, and the remaining 5,000,000 dols. was appropriated by the United States Government, together with the support of the latter. Later, this capital had to be considerably augmented. The site chosen for the exhibition was a good one, being situated on the western limits of St. Louis. In all there were over 1,240 acres, 250 acres of which were roofed in. The general scheme of the plan was designed by a committee of American architects, amongst whom were such men as Cass Gilbert, Carrere, Hastings, Hames, and Link, and it resembled a lady's open fan. The centre of the picture, and what may be likened to the handle of the fan, was the festival hall, situated on the top of the hill. Flanking the festival hall on either side was the colonnade of States formed in a crescent, with a restaurant pavilion at each extremity. The face of the hill in front of these was terraced, and three series of cascades discharged 90,000 gallons of water per minute into the grand basin at the foot. From the hill as the focal point three main avenues radiated like the ribs of a fan offering a vista, terminated with the highly-decorated features of the festival hall and the colonnade of States. A grand transverse avenue crossed the three main avenues, and gave the general outline to eight of the main exhibit buildings." The lecturer then described the engineering of the building. The construction of the main buildings was under the control of the Division of Works, and it was decided to erect these in timber, partly owing to the then congested state of the steel market, and partly to save expense. Internally, the buildings were intended to be finished in plaster, but this and much of the colour scheme for the exteriors had to be omitted for lack of funds. Some idea of the enormous size of the exhibition may be gained from the fact that the average height of the cornice level to the buildings was 60 ft. from the ground. The lecturer then described in detail the festival hall, colonnade of States, restaurant pavilions, cascades and gardens, United States Government building, mines, liberal arts, education, manufactures, electricity, varied industries, machinery, transportation, agriculture, horticulture, forestry, administration, Washington State, and foreign buildings. Perhaps one of the most surprising facts of all the wonders of the World's Fair was that, with all the inventive genius at the disposal of the American race, so few original architectural efforts were made. The architects of the mines and transportation buildings alone made any attempts at conceiving original designs. The lecture was illustrated by lantern slides. The following officers were nominated for the ensuing session:—President, Mr. H. S. Chorley, M.A., A.R.I.B.A.; Vice-Presidents, Messrs. P. Robinson (F.), and S. D. Kitson, M.A.; hon. treasurer, Mr. G. F. Bowman; hon. librarian, Mr. F. Musto (A.); hon. secretary, Mr. A. E. Kirk (A.); members of Council, Messrs. W. G. Smithson (A.), F. E. P. Edwards (F.), C. B. Howdill (A.), H. A. Chapman (A.), A. R. Hill (A.), and G. E. Reason (Assoc. member).

NORTHERN ARCHITECTURAL ASSOCIATION.—The annual meeting of this Association was held on the premises, 6, Higham-place, Newcastle, on the 7th inst., Mr. J. T. Cackett (President) in the chair. The annual report of the council for the forty-sixth session was read by the hon. secretary, Mr. A. B. Plummer. The report expressed the pleasure of the council in again recording the increased success of the Association. During the session, and since the last report, two members, nine associates, and fourteen students were elected, as compared with nine members, ten associates, and thirteen students during the previous twelve months. The roll of members for 1906 was as follows:—Members, seventy-eight; associates, seventy-two; students, seventy—total, 220. The report of the treasurer showed a total income of 271*l.* 2s. 8d., the cash balance from 1904 being 79*l.* 2s. 7d. The total expenditure amounted to 267*l.* 8s. 7d., leaving a balance in hand of 3*l.* 14s. 1d. It was stated in the annual reports of the Students' Sketching Club and the Students' Classes Club that the memberships were twenty-two and twenty-nine respectively. The drawings submitted for the Northern Architectural Association for the degree of R.I.B.A. were exhibited during the evening. Mr. Bryan Watson was successful in securing the Glover Bronze Medal. Only one set of drawings, however, was submitted for this competition. The award of the assessors in connexion with the essays competition was read by the Chairman, who expressed his regret at noting that there had been only two competitors that year. The two entrants were placed as follows:—Mr. William Stockdale (under the motto of "York"), of North Shields, 1; Mr. Arnold Sutherland Constable ("Essayez"), of Stocksfield-on-Tyne, 2. On the proposition of the Chairman, a vote of thanks was accorded to the hon. secretary, Mr. A. B. Plummer, for his services to the Association, it being also decided to record in the minutes appreciation of Mr. Plummer's work in connexion with the Association's premises. The President intimated that considerable interest was being shown in regard to his suggestions for the proposed alteration of New Bridge-street. He believed that his ideas would influence the City Council in their line of policy in reference to the alterations. With the election of Messrs. Hill and Badenoch as auditors and a vote of thanks to the Chairman the meeting ended.

EDINBURGH ARCHITECTURAL ASSOCIATION.—A meeting of the Edinburgh Architectural Association was held in the Association Rooms at 117, George-street, Edinburgh, on the 7th inst., when a paper was read by Mr. E. S. Lorimer, A.R.S.A., architect, on "Scottish Gardens and Garden Architecture." In the course of his remarks, Mr. Lorimer laid stress on the fact that there was at the present time a great interest taken in gardens. He gave a sketch of the development of garden design in Scotland, and spoke of the relation between the garden and the house. A historical account was given of some of the principal gardens in Scotland, and these were described, and Balcaskie, in Fife, was instanced as the ideal of what a Scottish country gentleman's garden ought to be. It was a fine specimen of a terrace garden. The lecture was illustrated by a series of lantern slides, which showed some of the gardens of Scotland and their sculpture and architectural setting, and another series illustrating some foreign—French and Italian—garden sculpture.

ARCHÆOLOGICAL SOCIETIES.

SUSSEX ARCHÆOLOGICAL SOCIETY.—There are at present 706 members on the roll of the Sussex Archæological Society, the number elected during last year being thirty-three. In their annual report, which has just been issued, the Council state that the sub-committee appointed to negotiate for the purchase of a site for the new museum and library has to report that some of the difficulties attendant on the Gun Garden site have been removed by enfranchisement, and that the services of Messrs. Runtz & Ford have been acquired as architects. Since the plans and elevations prepared by them are now before the landlords for approval, it is hoped that it will not be long before the committee can begin building. The Council regret that, owing to ill-health and his removal from the county, Mr. H. Michell Whitley felt compelled to resign the office of hon. secretary. Mr. W. E. Nicholson has been appointed in his place. Mr. C. G. Turner has also resigned the office of clerk, and Mr. W. W. Davey has been appointed to succeed him. In reference to Lewes Priory, Mr. W. H. St. John Hope reports that, through the kindness of Mr. Kenward, he has been permitted to make excavations in his garden for the purpose of finding any remains of the choir and transept of the Priory Church. Strong foundations are found to exist in many places, but no definite lines of masonry, and a portion of the tiled floor of the south transept was the only important point disclosed. By the like kindness of Mr. F. G. Courthope, Mr. St. John Hope was allowed to sink a number of holes in his garden, with the result that he was able to find the rubble core of the western end of the Priory Church, and also of the circular building which inclosed the conduit and lavatory above the so-called "lantern." Mr. St. John Hope further reports that he has elsewhere lighted upon the original letters in Italian of Giovanni Portinari to Cromwell, describing the destruction of the Priory Church. They seem to throw a rather different light upon the plan of the church from that afforded by what can now be proved to be Richard Moryson's somewhat inaccurate translation. During the year the Roman pavement at Bignor has been repaired, and the tesseræ fixed at the cost and under the supervision of the Society of Antiquaries, of London, and a probably unique wall-painting has been discovered in a house known as the "Old Flushing Inn," Rye. The Society has made a grant towards the copying of this wall-painting, which will be reproduced in a forthcoming volume.

COMPETITION

HACKNEY PUBLIC LIBRARY.—In the competition for the Hackney Public Library 152 designs were sent in, and from these the assessor (Mr. J. B. Simpson, F.R.I.B.A.) selected three. The competitors were Mr. Crouch, Mr. Trimble, and Messrs. Crouch & Butler, and they were selected in that order. The Committee selected the designs of Mr. Crouch.

BOOKS RECEIVED.

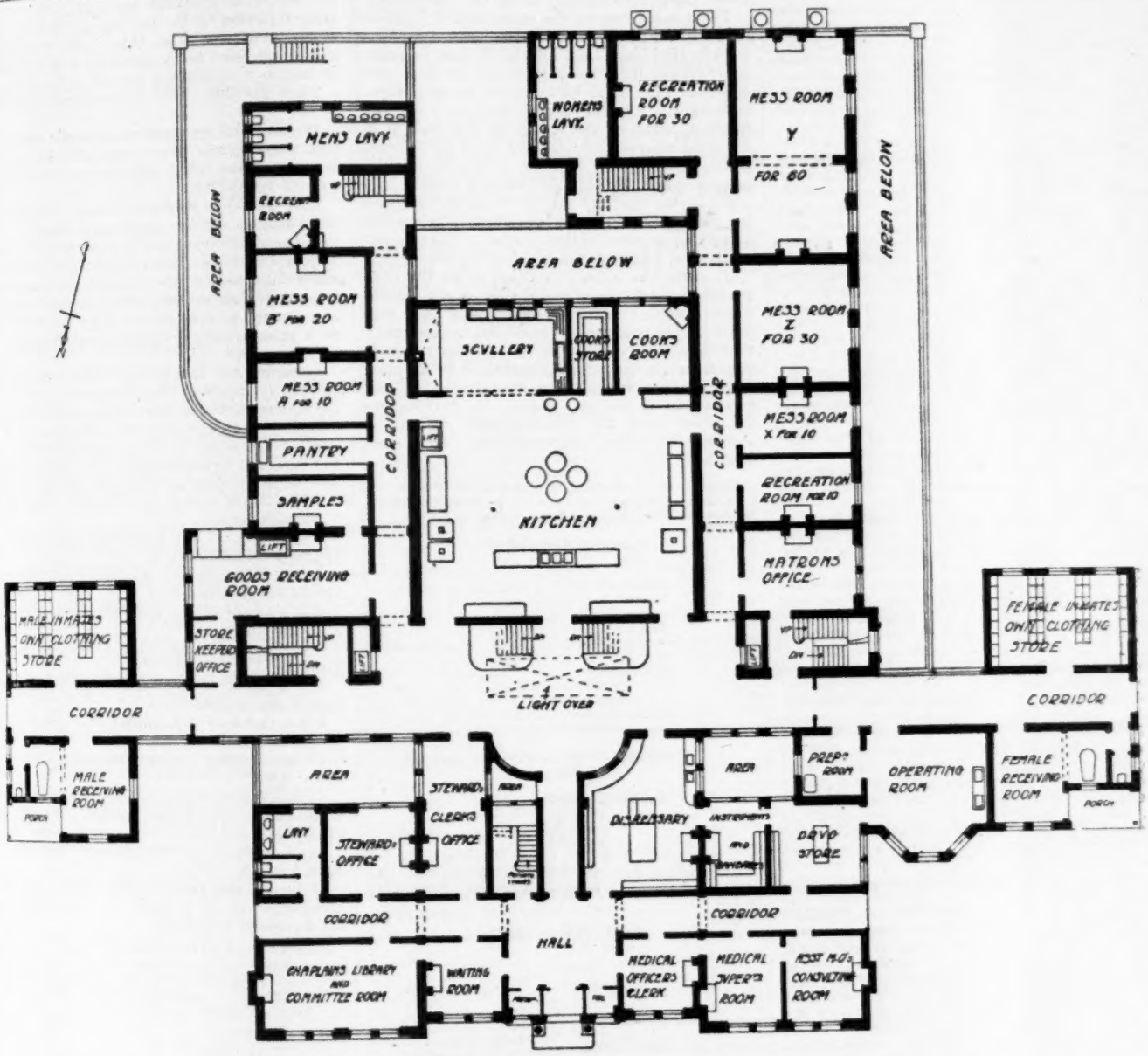
SANITARY ENGINEERING; A PRACTICAL MANUAL. By Francis Wood, M.Inst.C.E. Second Edition. (Chas. Griffin & Co.)

PORTFOLIO OF MEASURED DRAWINGS: School of Architecture, University of Liverpool. Vol. I. (University Press, Liverpool. 15s.)

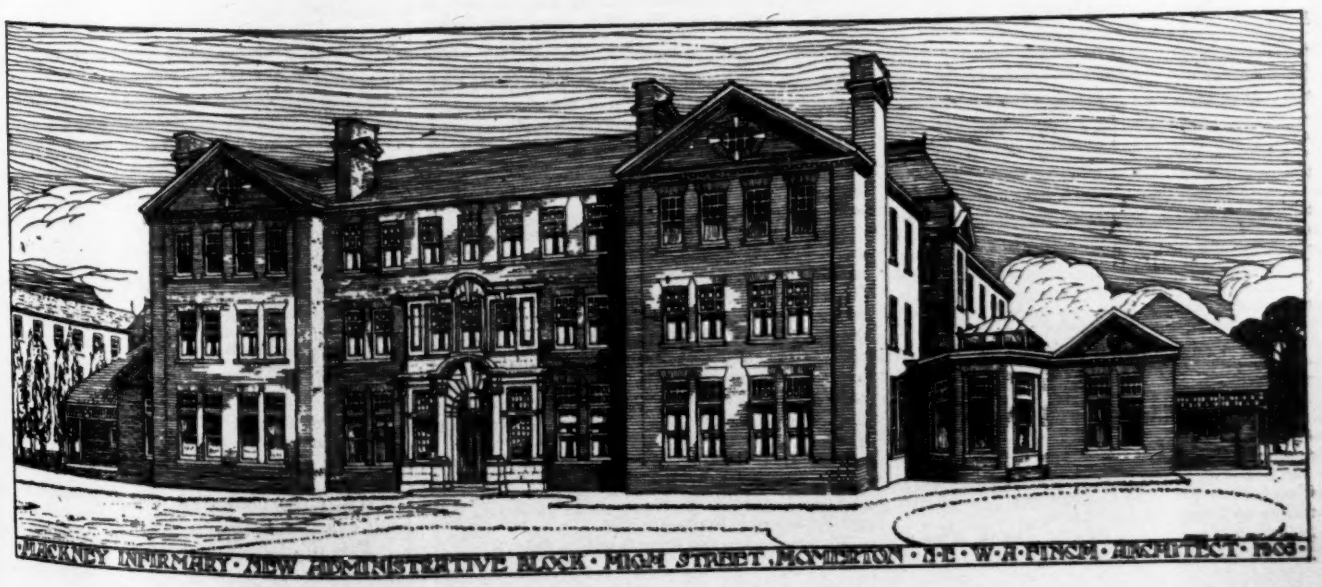
HISTORICAL MANUSCRIPTS.—In reply to a question by Sir Thomas Esmonde as to when the report on the MSS. of the Irish Franciscans will be published by the Historical Manuscripts Commission, Mr. M'Kenna replies in the Parliamentary papers that the report is now in type, and it is hoped to issue it in the course of next month.

HACKNEY UNION INFIRMARY NEW ADMINISTRATIVE BLOCK.

THE scheme of which the present building forms an important part had its inception so long ago as 1892. If carried out in its entirety the administrative block now in course of erection would eventually become the central building of the Infirmary group, having in addition to the two present pavilions on its eastern side, which will then serve for the accommodation of male patients, two additional pavilions for women on the vacant ground to the west. The whole would be connected by a covered way at the ground floor level, and subway beneath, running from end to end, by means of which service would be conducted from the building to the various departments on either side. The old building fronting the High-street would be cleared away and the ground left clear with the exception of a site for a porter's lodge and possibly a residence for the medical superintendent. The final design for the new building was completed by the architect, Mr. W. A. Finch, in 1903, and is intended for the administration of the existing Infirmary and also for a possible extension. It will contain accommodation for seventy-six resident male and female officers, with spare rooms, should this number be increased. Provision is also made to enable an extra story to be easily added to the east block should it at any time become necessary. The building will consist of a basement, ground, and two upper stories. The basement contains a central general store and goods distributing



GROUND FLOOR PLAN



HACKNEY INFIRMARY · NEW ADMINISTRATIVE BLOCK · HIGH STREET, HOMERTON · A·E·W·A·FINCH · ARCHITECT · 1903 ·

room, lit from an open area on the south, in rear of which are the coal store and a chamber in which will be placed the valves controlling the heating and domestic hot water service throughout the building. This chamber is in direct communication by means of a tunnel, with the boiler and engine-house situated in the workhouse. On the east of the general store is a corridor giving access to the various goods stores and unpacking-room and a spacious open area. On the west is a similar corridor affording access to the needle-rooms, clothing, and drapery stores, and matron's store, which also derive their light from an open area. The main axial corridor to the north is lit by three open areas, and affords communication to the existing pavilions, switch-board and battery-room, and a pipe subway under the northern portion of the building. Four lifts will be provided for conveying goods to the various floors. There are three staircases from this basement, the main one communicating with the ground floor only, the others with various floors above.

The ground floor provides in the north block for an entrance-hall, with corridors to the east and west, communicating with a waiting-room, chaplain's library and committee-room, stewards' offices, dispensary and drug and instrument stores, medical officers' consulting-rooms, and the necessary lavatory accommodation. There is here a staircase, which gives communication to the first floor only. A short passage leads from the hall to the main axial corridor, which communicates with the male and female receiving rooms, to each of which are attached baths and lavatories, with inmates' own clothing stores in close proximity. An operating-room, with north light, and a preparation-room adjoining are also approached from the main corridor. The east block contains a goods receiving room with store-keepers' office and sample room attached, a pantry, mess and recreation-rooms for male officers, also their lavatory accommodation. The west block contains the matron's offices and female mess and recreation-rooms, together with the necessary lavatory accommodation. The space between the east and west blocks is taken up by a large and lofty kitchen, top-lighted and ventilated, to which is attached a scullery, cooks' store, and cooks' room.

Five staircases give access to the first floor, which will contain the various officers' bed and sitting rooms, bath-rooms, lavatories, etc. There will also be a small kitchen and scullery for the use of the medical officers, matron, and steward. From this floor access will be gained to the second floor by three staircases. The floor will contain cubicles for wards, dormitory, kitchen and laundry-maids and rooms for the remainder of the female staff, for whom bath and lavatory accommodation is also provided. Officers' box-rooms will be provided on each floor. Above the ground floor the building will resolve itself into three detached blocks, thus allowing for the free circulation of air, but communication will be preserved by means of external fire-escape staircases and bridges. To facilitate progress in erection, the contract was divided into two portions.

The removal of the old buildings and erection of the substructure to the ground level was executed by Messrs. Stapleton & Sons, of High-street, Stoke Newington, and the remainder of the building is being carried out by Mr. Albert Monk, of Lower Edmonton. It is of brick, with slated roofs and of fire-resisting construction throughout, but fire hydrants are to be fixed in convenient positions. The decoration throughout is of the simplest character, economy consistent with sound construction being the rule. The quantities were prepared by Mr. G. T. G. Wright, of Great Winchester-street, E.C. The clerk of the works is Mr. J. T. Hodgson.

Correspondence.

FELLOWSHIP, R.I.B.A.

SIR,—I should like to be allowed, as an Associate of some eleven years' standing, to express my surprise at the result of the recent election by ballot, and regret at the exclusion of the majority of the candidates for election to the Fellowship.

In my opinion it would be preferable, where members demand, according to the by-laws, an election by the ballot, that they should restrict such method of election to certain candidates as to whose qualifications they may have information—information, perhaps, not in the possession of the majority of the members of the Institute.

The fact that there might occasionally be a candidate or candidates for election to the Fellowship, proposed and supported in perfect good faith by those responsible for a nomination or nominations, against whom there might be reasonable objections, cannot be controverted. But the indiscriminate rejection of candidates for the Fellowship who have not passed an examination for election as "Associate" previously would at any time be deplorable.

HENRY JAMES WISE.

The Student's Column.

SOME MATHEMATICAL METHODS AND USEFUL DATA FOR ARCHITECTS.—X.

SQUARE ROOT.

As the main object of this article is to indicate contracted and other ready methods of extracting square roots, brief reference only is made to the methods more generally employed, these being introduced chiefly for comparison.

The general rule for the extraction of a square root is stated below as a matter of convenience.

Rule (1).—(*a*) Mark off the figures in pairs, commencing from the right-hand, by dots over alternate figures, or by commas between alternate figures. If the number includes a decimal fraction, mark off the figures of the fraction in a similar manner, commencing from the decimal point, making the number of digits even, if originally odd, by the addition of a cipher.

(*b*) Divide the first period of the dividend by the highest number whose square does not exceed the amount of that period. This number is the first figure in the required square root.

(*c*) After the remainder bring down the next period of the dividend and divide by the highest digit which, multiplied into twice the first digit of the quotient (considered as so many tens) and into itself, will give products whose sum does not exceed the number to be divided. After division bring down the remainder, and proceed in a manner similar to that before described until the exact square root or a sufficiently exact approximation has been obtained.

Example (1): Find the square root of 62809645·586. Adding one cipher at the end of the decimal fraction, marking off the periods, and proceeding as above, We have

```
62,80,96,45·58,60(7925·253 +
49
---
149)1380
    1341
    ----
1582)3996
     3164
     ----
15845)83245
      79225
      -----
158502)402058
       317004
       ------
1585045)8505460
        7925225
        -------
15850503)58023500
         47551509
         --------
         10471991
```

The working may be shortened by applying the Italian method of division, as given in Article VII., p. 206.

Thus

```
62,80,96,45·58,60(7925·253 +
---
149)1380
---
1582)3996
-----
15845)83245
------
158502)402058
-------
1585045)8505460
--------
15850503)58023500
---------
10471991
```

A contracted method of extracting the square root is given below. In some cases the result will be the exact root, and in others a close approximation thereto.

Rule (2).—Find one more than half the number of figures in the required root by the ordinary method (see Rule 1), and determine the remaining figures of the root by ordinary division of the remainder by double the part of the root already found, the units figure of the product being rejected.

To apply this rule it is first necessary to know how to find the number of figures there are in the square root of any given whole number. The process is quite easy, for it is simply necessary to mark off the figures in pairs from the right, and then if the number of figures is even, each pair gives one figure in the square root, or if the number of figures is odd, each pair gives one figure in the square root, and the single figure remaining also gives one figure.

Example (2): Find the square root of 168558289.

Marking off the periods we find there are four pairs of figures and a single figure over. Therefore, there are five figures in the square root.

We have first to find three figures by Rule (1).

Thus

```
1,68,55,82,89(129
1
---
22)68
   44
   --
249)2455
    2241
    ----
    2148289
```

The first three figures of the square root are 129 with the remainder 2148289.

Next we have to find the two remaining figures of the square root by Rule (2), dividing the remainder 2148289 by (129 × 2) = 258 after rejection of the last figure. Here as the figure rejected is more than 5, the next figure to the left must be increased by 1 (as explained in Article V., p. 147), giving 26 as the divisor.

Then 2148289 ÷ 26 = 82·6, which is taken at 83.

Writing the quotient so obtained after the first three figures of the root previously determined we have 12983, which is the exact square root of 168558289.

Rule (3).—*The Method of Factors.*—The process of evolution can be very much facilitated in the case of numbers readily separable into prime factors, for as a *perfect square*, or the square of a whole number, is the product of two equal factors, it follows that when a perfect square is expressed as the product of its prime factors, each prime factor occurring must be raised to an *even* power.

Consequently familiarity with prime factors frequently enables the operator to arrive at the square root of a number by mere inspection.

Rules for ascertaining the prime factors of a number are given in all manuals of arithmetic, and need not be repeated here, but the following tests of divisibility are specially worthy of note.

2 is a factor of any number whose last figure is divisible by 2.

3 is a factor of any number the sum of whose figures is divisible by 3.

4 is a factor of any number whose last two figures are divisible by 4.

5 is a factor of any number whose last figure is either 0 or 5.

6 is a factor of any number divisible by both 2 and 3.

8 is a factor of any number whose last three figures are divisible by 8.

9 is a factor of any number the sum of whose figures is divisible by 9.

10 is a factor of any number whose last figure is 0.

11 is a factor of any number if the difference between the sum of the figures in the odd and even places is divisible by 11, or equals 0.

12 is a factor of any number divisible by both 3 and 4.

It should also be remembered that no whole number which is a perfect square ends with the figures 2, 3, 7, or 8.

Example (1): Find the square root of 1089.

```
3)1089        ∴ 1089 = 3² × 11²
---
3)363      and √1089 = √(3² × 11²)
---
11)121             = 3 × 11
---
 11
```

∴ 33 is the required square root.

Example (2): Find the square root of 7056.

```
4)7056        ∴ 7056 = 2⁴ × 3² × 7²
---
4)1764     and √7056 = √(2⁴ × 3² × 7²)
---
3)441              = 2² × 3 × 7
---
3)147              = 4 × 21
---
7)49
---
 7
```

∴ 84 is the required square root.

To extract the square root of a vulgar fraction the following rules are available:—

Rule (4).—Reduce the fraction to its lowest terms, and take the square roots of the numerator and denominator as the terms of the required square root.

Example: Find the square root of $\frac{24}{54}$.

As neither the numerator nor the denominator in this fraction is an exact square, it is impossible to obtain an exact result without reduction of the fraction to its lowest terms.

Here

$$\frac{24}{54} = \frac{4}{9}$$

Therefore

$$\sqrt{\frac{24}{54}} = \sqrt{\frac{4}{9}} = \frac{2}{3}$$

When the numerator and denominator are not exact squares two methods are open.

Rule (5).—Multiply the terms of the fraction

by such a number as will make the denominator an exact square, and extract the square root of the fraction so obtained, or

Rule (6).—Multiply the numerator and denominator together, then use the square root of the product as the numerator of the required root and the original denominator as its denominator.

Example: Find the square root of $\frac{5}{32}$

By Rule (5)

$$\sqrt{\frac{5}{32}} = \sqrt{\frac{5 \times 2}{32 \times 2}}$$

$$= \sqrt{\frac{10}{64}} = \frac{\sqrt{10}}{8}$$

The required square root being $\frac{3{\cdot}16 +}{8} = 0{\cdot}395 +$

Example: Find the square root of $\frac{5}{6}$

By Rule (6)

$$\sqrt{\frac{5}{6}} = \frac{\sqrt{5 \times 6}}{6} = \frac{\sqrt{30}}{6}$$

The required square root being $\frac{5{\cdot}477}{6} = 0{\cdot}913$.

Rule (7).—Convert the vulgar fraction to its equivalent decimal, extract the square root of this, and, if desired, re-convert to a vulgar fraction.

Example: Find the square root of $\frac{5}{6}$.

By Rule (7)

$$\sqrt{\frac{5}{6}} = \sqrt{0{\cdot}833+} = 0{\cdot}913.$$

The square root of a mixed number can be treated by Rules (4), (5), (6), or (7), after reduction to an improper fraction, or after reduction of the vulgar fraction to its decimal equivalent.

In dealing with expressions containing *surds*, or roots whose exact magnitude cannot be stated arithmetically, methods can often be adopted which simplify to a considerable extent the incidental extraction of roots and the determination of the required values.

Rule (8).—The product of the sum and the difference of two quantities is equal to the difference of the squares of the same quantities. (Illustration $(a + b)(a - b) = a^2 - b^2$).

Example (1): Find the value of $\frac{1}{\sqrt{2} - 1}$

It is always troublesome to have a surd in the denominator, and if we multiply the numerator and the denominator by $\sqrt{2} + 1$ then, in accordance with Rule (8), the denominator reduces to 1, and the surd is transferred to the numerator, where it can be dealt with more readily.

The process is as follows:—

$$\frac{1}{\sqrt{2} - 1} = \frac{1 \times (\sqrt{2} + 1)}{(\sqrt{2} - 1)(\sqrt{2} + 1)}$$

$$= \frac{\sqrt{2} + 1}{2 - 1} = \frac{\sqrt{2} + 1}{1}$$

Then we have only to extract the square root of 2 approximately, and the addition of 1 gives the required value: $(1{\cdot}41421 + 1) = 2{\cdot}41421$.

If worked in the ordinary way we should have

$$\frac{1}{\sqrt{2} - 1} = \frac{1}{1{\cdot}4142136 - 1}$$

$$= \frac{1}{0{\cdot}4142136} = 2{\cdot}41421$$

This involves the extraction of $\sqrt{2}$ to seven places of decimals, and the division of 1 by 0·4142136, both of these operations involving tedious division sums. If $\sqrt{2}$ were only extracted to five places of decimals we should get the incorrect result 2·41423.

Example (2): Find the value of $\frac{\sqrt{3}}{\sqrt{6} + \sqrt{3}}$

Multiplying the numerator and denominator by $(\sqrt{6} + \sqrt{3})$ we get

$$\frac{\sqrt{3}}{\sqrt{6} + \sqrt{3}} = \frac{\sqrt{3}(\sqrt{6} - \sqrt{3})}{(\sqrt{6} + \sqrt{3})(\sqrt{6} - \sqrt{3})}$$

$$= \frac{\sqrt{18} - 3}{6 - 3}$$

As $\sqrt{18}$ is found to be 4·2426 approximately, we have

$$\frac{4{\cdot}2426 - 3}{3} = \frac{1{\cdot}2426}{3}$$

$$= 0{\cdot}4142$$

Rule (9).—The square of a binominal expression (that is, an expression consisting of two terms connected by the sign + or −) is equal to the square of each of its terms, and twice the product of the same terms.

Thus

$$(a + b)^2 = a^2 + b^2 + 2ab$$
$$(a - b)^2 = a^2 + b^2 - 2ab.$$

This rule can be applied with considerable saving of time in finding the square roots and expressions where one term is a binominal surd which is the square of another binominal surd.

Example: Find the square root of $21 - 8\sqrt{5}$.

Here

$$21 = 16 + 5 = 4^2 + (\sqrt{5})^2$$

and

$$8\sqrt{5} = 2 \times 4\sqrt{5}.$$

It will be observed that 21 represents the sum of the squares of the terms 4 and $\sqrt{5}$ in the expression $4\sqrt{5}$, and $8\sqrt{5}$ represents twice the product of the terms in the same expression.

Hence

$$\sqrt{21 - 8\sqrt{5}} = \sqrt{(16 + 5) - (2 \times 4\sqrt{5})}$$

$$= \sqrt{(4^2 + 5) - (2 \times 4\sqrt{5})}$$

$$= \sqrt{(4 - \sqrt{5})^2}$$

and the required square root is $(4 - \sqrt{5})$.

By finding the square root of 5, say 2·236, and subtracting, $4 - 2{\cdot}236 = 1{\cdot}764$, we obtain the result with very little trouble.

To get an equally accurate result by the ordinary method, the square root of 5 would first have to be extracted to at least nine places, nine times the root would then be deducted from 21, and the square root of the remainder extracted to four places.

Applications of Square Root.

Example (1): Find the length in yards in the side of a square plot of land containing 83 acres 2 roods 12 perches and 8 sq. yds.

83 acres 2 roods 12 perches 8 sq. yds. = 404,511 sq. yds.

As the area of a square = (length × breadth) = (length)^2.

Therefore, the length of the side is

$$\sqrt{404511} \text{ sq. yds.} = 636{\cdot}011 \text{ yds.}$$

Example (2): Find the length in feet of the diagonal of a square field containing 3 acres.

3 acres = 43,560 × 3

= 130,680 sq. ft.

Therefore, the length of the side is

$$\sqrt{130680} = 361{\cdot}49 \text{ ft.}$$

As the diagonal of a square = $\sqrt{2}$ × length of side,

Therefore, the length of the diagonal is

$$\sqrt{2} \times 361{\cdot}49$$

$$= 511{\cdot}222 \text{ ft.}$$

Example (3): Find the length in yards of the diagonal of a rectangular plot of land measuring 320 yds. by 152·4 yds.

By Euclid I., 47, the area of a square described on the diagonal of a rectangle is equal to the sum of the areas of the squares described on the two other sides of either triangle formed by the diagonal and the sides of the rectangle

Therefore, the length of the diagonal is

$$\sqrt{320^2 + 152{\cdot}4^2}$$

$$= \sqrt{102400 + 23225{\cdot}76}$$

$$= \sqrt{125625{\cdot}76}$$

$$354{\cdot}43 \text{ yds.}$$

Example (4): Find the radius in feet of a circular enclosure covering an area of half an acre.

As the area of a circle = 3·14159, say 3·1416, times that of the square described on its radius,

Therefore, the required radius

$$= \sqrt{\frac{0{\cdot}5 \times 43560}{3{\cdot}1416}}$$

$$= \sqrt{\frac{21780}{3{\cdot}1416}}$$

$$= 83{\cdot}26 \text{ ft.}$$

Example (5): Find the circumference in feet of the circular enclosure in example (4)

As the circumference of a circle = diameter × 3·1416,

Therefore, the required circumference

$$= 83{\cdot}26 \text{ ft.} \times 2 \times 3{\cdot}1416$$

$$= 523{\cdot}14 \text{ ft.}$$

Example (6): Find the length in feet of a rectangular hall, the area of which is 202½ sq. yds., the length being two and a half times the breadth.

Since the length = the breadth × 2·5, the area can be divided into two squares each of whose sides is equal to the breadth of the hall, and one rectangle having one side equal to the breadth and another side equal to half the breadth of the hall.

The area of each square in square feet

$$= 202{\cdot}5 \times 9 \times \frac{2}{5}$$

$$= 729 \text{ sq. ft.,}$$

and the side of each square

$$= \sqrt{729}$$

$$= 27 \text{ ft.}$$

Therefore, the breadth of the hall is 27 ft., and the length of the hall

$$= 27 \times 2{\cdot}5 = 67{\cdot}5 \text{ ft.}$$

OBITUARY.

MR. F. WHITTINGHAM.—The sudden death is announced of Mr. Frank Whittingham, architect, of Wrexham and Connah's Quay, which took place at his residence at Cefnybedd, near Wrexham, on Wednesday last week. The deceased gentleman, who was only twenty-eight years of age, was the only son of Mr. James Whittingham, J.P., of Fechan House, Wrexham.

MR. F. J. MORRIS.—Mr. Francis J. Morris, Borough Surveyor of Grantham, died somewhat suddenly at the home of his father, at Sleaford, on the 12th inst. Mr. Morris, who was only forty years of age, was appointed by the Grantham Town Council ten years ago.

GENERAL BUILDING NEWS.

PRIMITIVE METHODIST CHURCH, ASHBY-DE-LA-ZOUCH.—The foundation-stones of the new Primitive Methodist Church, on Burton-road, Ashby, were laid a short time ago. The style of architecture is Gothic. The cost of the buildings will be about 2,200*l*. The contractors are Messrs Orton & Son, Ashby, and the architect is Mr. Harry Smedley, of Ashby.

COUNCIL SCHOOLS, CHATHAM.—New Council schools have been erected in Glencoe-road, Chatham. The departments are arranged as follows: A two-story building, accommodating 304 boys on the ground floor and 304 girls on the first floor, and a separate one-story building for 308 infants. The classrooms in each block are grouped around three sides of a central hall, and each hall is directly accessible from the entrances. Duplicate entrances are provided to the departments on the ground floors and two staircases give access to the girls' department and the first floors. All classrooms have stepped galleries, and they are so arranged that all scholars obtain direct light from the left side. Two commodious cloak rooms and lavatories are provided to each department, fitted with numbered hat and coat hooks on iron rails and standards. There are also teachers' rooms and stock rooms, those in the boys' department being placed on a mezzanine floor over the cloak-rooms. The central halls, cloak-rooms, and corridors are warmed on the low-pressure hot water system; each radiator is capable of independent control. The apparatus was installed by Messrs. Gibbs & Sons, of Liverpool. The classrooms are warmed by means of warm air ventilating grates, supplied by Messrs. Hendry & Pattisson, of London. All rooms and halls have separate wall inlet ventilators and extract shafts carried up in the chimney stacks. The lighting is by gas, with two-light pendant in the classrooms, and reflecting star lights in the central halls. The gas fittings were supplied by Mr. Frank Rayfield, of Chatham. The site being a sloping one, a cookery centre has been provided on the sub-ground floor, affording accommodation for upwards of forty pupils. The materials used in the outside work are red bricks from the Darland brickfield, and Portland stone copings, strings, and key stones, etc. The roofs are covered with Broseley tiles, and the flats with Val de Travers asphalt. Al. corridors, staircases, and cloak-rooms have high dadoes of glazed bricks, the classrooms and central halls have dadoes of matched boarding, the walls above the dadoes are distempered in a dull reddish colour, and the interior woodwork is stained and varnished. The floors throughout are fire-resisting and covered with pitch-pine blocks. The offices are placed well away from the school buildings, and the sanitary fittings were supplied by Messrs. T. & W. Farmiloe, of London. The playgrounds are paved with tar paving, and covered shelters, with a drinking-fountain in each, are provided for each department. The schools have been erected from the design and under the superintendence of the Architect to the Education Committee, Mr. Herbert H. Dunstall, by the contractor, Mr. H. E. Phillips, of Gillingham, at the contract price of 11,635*l*. Mr. George Catt was foreman of works, and Mr. Thomas Cramp carried out the duties of clerk of works.

SCIENCE SCHOOL, DULWICH.—On the 3rd inst. Lord Rayleigh laid the foundation-stone of the new science school which is being erected in connexion with Dulwich College. The building is to cost 18,000*l*. It has been designed by Mr. Charles E. Barry, and is being built to the north of the present buildings in red brick and terra-cotta. On the ground floor there is to be provision for the teaching of physics, with a museum, and on the top floor there will be chemistry rooms with an optical laboratory. Both lecture theatres and teaching laboratories will be provided.

PROPOSED COTTAGE HOSPITAL, ALSTON.—Plans have been prepared by Mr. T. Taylor Scott, architect, Carlisle, for a cottage hospital which is to be erected at Alston. The plans show that the new hospital will have a frontage of over 70 ft., with the main entrance in the centre, which forms a porch leading into the vestibule hall and corridors. On the right-hand side of the hall is situated the operating-room, and beyond it, approached by the main corridor, will be a female ward with a cut off sanitary wing. The opposite end of the main corridor will give access to the male ward with an isolated sanitary wing practically the same as the female ward, and a nurse's night room adjoining it with inspection window. Bathroom and hospital stores for both wards will be approached from the main corridor. At the rear will be erected a large two-story block forming the administrative department at right angles with the body of the hospital, and consisting of kitchen, pantries, larder, scullery, matron's and nurse's bedrooms, etc.

PUBLIC LIBRARY, FENTON.—The new public library at Fenton is situate at the corner of Station-road and Baker-street. The exterior is of red Accrington brick and Hollington stone, and the roofs are covered with brindled tiles. In the entrance-hall is a decorative painting in oils of children sitting at the feet of an allegorical

figure of Knowledge. It has been painted and presented by Mr. G. M. Forsyth, of Stoke. The lending library has bookstacks of 12,000 volumes capacity. The reference library is placed in the quietest and most secluded part of the building. The general reading-room will accommodate seventy-eight readers—eighteen at newspaper-stands and sixty at tables. In the basement there is a heating chamber with coke and coal stores. A staircase leading from the entrance-hall is constructed of Stuart's granolithic. The principal room on the first floor is a lecture-hall, to seat 120 persons, and on the same floor are a ladies' reading-room, committee-room, and filing-room. The walls in the building are painted with Harland's enamel; the woodwork is of selected varnished pitch-pine; the railings, balustrades, grates, and gas fittings are executed in wrought iron; the floors are of steel and concrete, and are fire-proof; all the rooms are laid with wood blocks, and the building is heated by means of low-pressure hot-water apparatus. The architect of the building is Mr. F. R. Lawson, of Fenton and Longton, and the contractor Mr. John Bagnall. Messrs. Minton, Hollins, & Co., of Stoke, supplied all the mosaic, faience, and wall-tiling; Messrs. Thomas Brawn & Co., of Birmingham, the wrought-iron grates and gas fittings, the remaining ironwork being supplied by Mr. W. Durose, of Tunstall; Messrs. Burgess & Co., of Liverpool, the wood-block floors; the Crittall Manufacturing Company, of Braintree, Essex, the wrought-iron casements; Messrs. E. Peake & Sons, of Fenton, the heating apparatus. The sanitary ware was presented by Messrs. F. Winkle & Co.

ASYLUM, NABURN, YORK.—The new asylum which has been built by the Corporation of York at Naburn has a present accommodation for 362 patients, but the building could be extended so as to permit of 124 more being received. The new asylum faces south-west, and the extreme length of the building from north-east to south-west is about 740 ft., and the depth from north to south 430 ft. A lodge has been built at the entrance from Naburn-lane, and a wide drive leads up to the north entrance, over the doorway of which is a medallion containing the City Arms carved, and surmounting this is a turret with a domed roof. The entrance hall has a flooring of mosaic, on which is represented the City Arms. The buildings have been arranged somewhat in the form of a fan, and there are three blocks on each side of the centre all facing south-east. Those on the north-east side are for males and those on the south-west for females, with the apartments of the assistant medical superintendent between. The requirements of the Lunacy Commissioners have been fully met, the details of the accommodation being as follows:—Female side, block A., epileptic, ground floor, 40; chronic, first floor, 40. Block B., recent and acute, ground floor, 30; recent and acute, first floor, 30. Block C., sick and infirm, ground floor, 35; sick and infirm, first floor, 35; total females, 210. North side, Block D., sick and infirm, ground floor, 25; sick and infirm, first floor, 25. Block E., recent and acute, ground floor, 20; recent and acute, first floor, 20. Block F., epileptic, ground floor, 30; chronic, first floor, 32; total males, 152. The estimated cost of the institution, fully equipped, is 133,000*l*. The cost works out approximately at 280*l*. per bed, exclusive of the land. The corridor from the entrance block and that of the assistant medical officer's block have terrazzo floorings by Geary Walker, of London. The plans of the building were drawn by Mr. A. Creer, City Engineer, and his assistant, Mr. Spurr, the contract having been executed by Messrs. Longden & Son, of Sheffield. The clerk of works has been Mr. J. C. Laight, who had for his assistant Mr. W. Berkeley, who has been appointed by the Asylum Visiting Committee resident engineer. The wooden flooring of the building has been in the hands of Messrs. "Ronuk," Ltd., of Portslade, London, and Manchester, for treatment by their sanitary methods. Leading out of the main corridor are the night nurses' quarters. There are two stories with ten rooms on each. At one end of the long corridor is the female bath-room, that for the males being at the other end. The fittings are by Doulton, of Lambeth, the floors having been laid by the Challenge Flooring Company, of London. The dormitories have Duresco coloured walls, and polished floors. The fire grates are of various designs with tiled hearths. They have been supplied by Messrs. Doulton, London, Messrs. Burmantofts, Leeds, the Selby Brick Company, Messrs. Dove, of York, and Messrs. Bushell, of York. The glazed bricks throughout the building have been supplied by Burmantofts and the Selby Brick Co., and the latter with the Castleford Brick Company have been responsible for the bricks for the external walls. The rubber arches over the doors and windows are made of bricks supplied by Lawrence, of Bratton, Berkshire, and the fire-proof ceilings and iron roof principals come from the works of Homan & Rogers, Manchester. A water tower 100 ft. high with a clock dial 7 ft. 6 in. in diameter, by Newey, of Petergate, York, has been provided. An isolation hospital and a mortuary have been built. The chapel, which is built on the left of the avenue leading to the entrance from Naburn-lane, is small in dimensions, and is built of brick with an open roof of stained and varnished pitch-pine. The interior of the walls are plastered in Keen's cement and coloured. The floor is of oak blocks, and the general seats are of pitch pine, whilst the choir stalls are of oak. The heating is supplied direct from the main building by radiators. The house for the medical superintendent is situated on the right of the entrance gates. On the north-west corner of the site six cottages have been erected for the head attendant, head gardener, and other employees. Messrs. Dent & Co., of York, are the contractors for the rebuilding of the farm steading.

HOLBORN COUNCIL'S NEW OFFICES.—The Establishment Committee of the Borough Council reported on Monday having authorised the Town Clerk to invite preliminary plans for this building from the following architects:—Messrs. Collcutt & Hamp, Edwin T. Hall, Henry T. Hare, Gerald C. Horsley, A. Brumwell Thomas, Septimus Warwick, and Herbert A. Hall.

DEPTFORD MORTUARY AND CORONER'S COURT.—Instructions have been given for the three sets of designs for the mortuary and coroner's court to be open for public inspection at the Town Hall from the 19th to the 24th insts. inclusive.

APPOINTMENT.

ROYAL BOROUGH OF KENSINGTON.—It is announced that Mr. Alfred Robert Finch has been appointed Borough Engineer and Surveyor, Kensington, in succession to Mr. William Weaver, who recently tendered his resignation after having been injured through an accident, and has been granted a pension of 500*l*. per annum. Mr. Weaver had served during more than forty years the former vestry and its successor, the Borough Council, firstly as a pupil and ultimately as chief in connexion with the largely increasing municipal work of the district, and is a past-President of the Incorporated Association of Municipal and County Engineers.

SANITARY AND ENGINEERING NEWS.

VENTILATION OF SEWERS.—The Highways Committee of the Greenwich Borough Council are to consider as to the advisability of convening a conference of the Camberwell, Deptford, Lewisham, and Woolwich Borough Councils to exchange opinions as to whether danger to the health of the inhabitants is likely to arise from the proposed sewer ventilators of the main sewers now in course of construction, and to ascertain whether any practical means can be devised for preventing a nusiance arising from the ventilation of sewers.

APPOINTMENT OF SANITARY OFFICERS.—The Local Government Board has sanctioned the appointment, in the place of Mr. R. W. Hindhaugh, resigned, of Mr. W. S. Matson as sanitary inspector in the Metropolitan Borough of Finsbury, as from February 15, 1906.

INSTITUTE OF SANITARY ENGINEERS.—A meeting for the formation of a Northampton District centre will be held at the Guildhall, Northampton, on Saturday, the 17th inst., at 3 p.m. The chair will be taken by the President of the centre, Mr. Alfred Fidler, M.Inst.C.E., Borough Engineer and Surveyor of Northampton. After the meeting an official visit will be made to the refuse destructors, tramways power-station, etc., under the direction of the President. The Hon. Local Secretary is Mr. A. E. Abbott, Engineer and Surveyor, Wolverton, Bucks.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—The partnership hitherto existing between Mr. Stephen Salter, of Oxford, and Mr. R. C. Davy, of Maidenhead, architects, has been dissolved.——Mr. Henry Stock, of the firm of Stock, Page, & Stock, architects, who recently resigned the appointment of Surveyor to the Haberdashers' Company, which he had held for twenty-three years, has been succeeded in that appointment by his son, Mr. H. W. Stock.——Mr. G. P. Knowles, A.M.Inst.C.E., has removed his offices from Craven-street to 39, Victoria-street, Westminster.

STATUARY AT THE CENTRAL CRIMINAL COURT.—The upper portion of the scaffolding at the new Central Criminal Court has now been removed, and the massive bronze-gilt figure of "Justice" which surmounts the building is visible. It is over 200 ft. above the street level, and was designed and executed for the casting by Mr. F. W. Pomeroy. Including the globe on which it stands, the figure is 20 ft. high, measures from 10 to 15 ft. from the extremities of the outstretched arms (uplifting the sword and scales of Justice), and weighs several tons.

PROPOSED STREET EXTENSIONS, NEWCASTLE.—A report has been issued by the City Engineer of Newcastle-on-Tyne Corporation with regard to the proposals for dealing with Market-street extensions. The first proposal is that part of New Bridge-street be widened a minimum width of 60 ft.; second, that Hood-street be continued to New Bridge-street, opposite to the foot of Higham-place, and with a width of from 40 to 50 ft.; third, that Erick-street be diverted a little westward, and become a continuation of Princess-street; four, that a street of 20 ft. wide be provided from Pilgrim-street to Trafalgar-street to give better access to the block of buildings on the south side of the new Market-street. The City Engineer recommends that the improvements should be commenced as early as possible after Parliamentary powers have been obtained.

WAR MEMORIAL, PENRITH.—A memorial to the local volunteers who were killed in the South African War has been erected in Connez-square, Penrith. It consists of a bronze figure representing the angel of peace placed on an unpolished column of Shap granite, which, in its turn, stands on a base of the same stone, formed into three steps. The angel stands with outstretched wings and arms, and holds in its hands a laurel wreath. The full height of the monument is 21 ft., and it has been designed by Mr. F. W. Doyle Jones, of West Hartlepool.

THE PEABODY FUND.—The forty-first annual report of the Peabody Fund states that 154 cottages of five rooms each are in course of erection at the Tottenham estate, and it is hoped that some of them will be ready for occupation towards the end of the present year. At the end of the year the governors had provided for the artisan and labouring poor of London 12,328 rooms, including those occupied by the superintendents and porters, besides bath-rooms, laundries, and lavatories. These rooms comprised 5,469 separate dwellings, viz., 82 cottages of 5 rooms, 105 tenements of 4 rooms, 1,833 of 3 rooms, 2,550 of 2 rooms, and 899 of 1 room.

CHICHESTER CATHEDRAL.—The programme of restorations to the cathedral during the coming summer was discussed at a meeting of the Executive Committee of the Cathedral Restoration Fund held in the Chapter House last week. The Committee had before them the chapter clerk's report as to the result of the appeal recently made to the county at large for the purpose of completing the restoration of the bell-tower, and of replacing the lead roof of the cathedral. This result has not been so favourable as the Committee hoped would be the case, though the substantial sum of 1,055*l*. has been paid or promised, besides 500*l*. promised by the Ecclesiastical Commissioners. In the absence of the supervising architect (Mr. Somers Clarke, of Brighton), who is abroad, Messrs. Vick & Sons, of Chichester, who have had the carrying out of a considerable amount of the recent restoration work, were consulted as to the details of the nature and cost of the further work required. They gave it as their opinion that at least 2,000*l*. will be needed to complete the bell-tower, while the work on the cathedral roof will necessitate another 3,000*l*. They recommended that the roof should be left for a year or two, as it is not so urgent, and that they should be instructed to get on with the repairs to the northern half of the bell-tower, which would take them practically the whole summer, and cost about 1,000*l*. The Committee, after discussion, resolved to instruct Messrs. Vick to carry out the renovation of the bell-tower, but limited the expenditure for the time being to 700*l*. The works will be under the supervision of Mr. Somers Clarke. For the completion of all the contemplated repairs and renovations above mentioned some 3,500*l*. is still needed. Meanwhile, 100*l*., which is in hand, of the old restoration fund is to be applied to the further pointing of the cathedral.

ARTESIAN WELLS IN LONDON.—An artesian well has just been bored at Baltic House, the large buildings just completed in Leadenhall, street, and a good supply of pure water obtained—which is remarkable for its softness, it being less than 6 degrees. The well was carried to a depth of 450 ft., and beds of yellow, blue, and variegated clays, also sand and pebbles, were passed through before the chalk was met with. An electric bore hole pump raises the water noiselessly to the top of the building, at the rate of 2,500 gallons per hour. Messrs. Alfred Williams & Co., of Artesian Works, Bow, were the engineers.

PROPOSED EDINBURGH EXHIBITION.—A special meeting of the Parks Committee of the Edinburgh Town Council was held on the 8th inst., to consider the application of the promoters of the Scottish National Exhibition, which it is proposed should be held in Edinburgh in 1908, for the use of Saughton Park as an exhibition site. The general feeling was that the committee could not adopt the policy of standing in the way of the success of the scheme, but members wished to be satisfied that it would be carried through, and that certain work which the exhibition authorities would have to undertake would be made of permanent value to the city.

THE T-SQUARE CLUB.—The club is holding its third smoking concert in the International Hall, Monico Restaurant, at 8 p.m. on Tuesday, the 20th inst. The chair will be taken by the President, Sir Aston Webb.

LONDON COUNTY BUILDING BILL.—In the House of Commons on Tuesday, on the motion for the second reading of the London County Building Bill, Colonel Legge said he rose, not to oppose the Bill, but to express a doubt whether the present was the best time to incur the expense proposed in erecting municipal offices on the south side of the Thames. The debt of the

County Council had risen from 17,500,000*l.* in 1889 to 33,000,000*l.* in 1905, although in the latter sum was included the burden occasioned by taking over the Board Schools. In regard to another scheme Colonel Welby had stated that the Council was in danger of overstraining its credit. The total cost of the site and buildings now proposed was 2,000,000*l.*, but this Bill only asked for 655,000*l.* for the site.—Sir E. Cornwall remarked that, leaving out of the question the cost of education cast upon the County Council, the debt had only increased by 8,000,000*l.*, or 2*d.* in the pound on the rates, in respect of public works in the last ten years. The percentage of debt to the rateable value was very much less in London than in most of the large provincial towns and cities, therefore these alarmist statements were not quite worthy of those who wished to regard London in its highest aspect. Of the staff of 1,950, the central offices housed 525, and the remaining 1,425 were accommodated in twenty-five separate buildings. The architect's department occupied seven buildings, the clerk to the Council's department occupied five, the controller's four, and the engineer's four. The Council paid in rents 38,765*l.* per annum, and yet the housing was a disgrace to London, and was only tolerated because it was understood to be temporary.—Sir E. Clarke said the site chosen appeared to be not only adequate and economical, but worthy of the purpose. The rental at present paid represented something more than the interest on the proposed outlay, although he doubted whether the expenditure would be kept within the limit mentioned. The Bill was then read a second time.

TRADES DISPUTES BILL.—A deputation from the Employers' Parliamentary Committee waited on Tuesday upon Mr Herbert Gladstone and the Attorney-General, at the House of Commons, on the subject of the Trades Disputes Bill. The Earl of Wemyss introduced the deputation, who asked that in any Bill contemplated by the Government their views should be considered. Nowadays it appeared to be the opinion of many people that only the interests of labour were of importance, and that the employers should be ignored. It was strongly urged that clear instructions should be given on picketing. The Home Secretary, in reply, said the time had come for attempting some settlement of this important and difficult question. A Bill was now under the consideration of the Government—in fact, was in the last stages of consideration—and in the course of a week or two it would probably be introduced into the House of Commons. The difficult points of the Bill were the liability of funds, the question of the law of conspiracy, and the question of picketing. Whatever proposals might be brought forward he was confident that they would not depart from the principle that it was the duty of the Government to see that all reasonable protection, as far as possible by law and executive action, should be given to everybody in the execution of his lawful business. He assured them that the Government was perfectly aware that there were other interests in this country besides labour interests, and that it would view this matter from the standpoint of public policy.

CHARING-CROSS IMPROVEMENTS.—In the House of Commons on Tuesday, Mr. Harcourt, answering Mr. Hay, said all the lands and buildings necessary for the completion and opening of the new road from St. James's Park to Charing-cross had been purchased in 1883 and 1885, and that the foundations of the buildings and entrance to Charing-cross would be completed by the end of June next.

BUILDING BY-LAWS.—In Tuesday's Parliamentary papers Mr. Brodie asked whether it is the case that inquiries have recently been addressed to the district and parish councils throughout the country asking for a return as to the housing requirements in their respective districts. The President of the Local Government Board stated that he has not asked district and parish councils for a return as to the housing requirements of their areas, but he recently addressed a circular to rural councils relating to by-laws with respect to new streets and buildings, and he stated that the object of the circular was to secure that, whilst sanitary requirements should be strictly observed, all unnecessary impediments in the development of building should be avoided.

IRISH SLATE QUARRIES.—In the Parliamentary papers for last Tuesday, Mr. Edward Barry, M.P., asks the Chief Secretary for Ireland if he will ask the Department of Agriculture to send an inspector to visit the slate quarries at Benduff, Roscarbery, County Cork, to report on the quality of the slate and the possibility of further development, giving special attention to the disadvantage under which the quarries at present suffer owing to the fact that they are ten miles from a railway station. Mr. Bryce replies that the Benduff slate quarry was inspected in 1904 by the Department's economic geologist in compliance with an application made to them by the managing director of the quarry, and the inspector's report was communicated to the managing director.

SHEFFIELD MASTER BUILDERS' ASSOCIATION.—The annual dinner of the Sheffield Master Builders' Association took place on the 8th inst. at the Building Trades Exchange. Mr. T. Roper (President of the Association) was in the chair. In submitting the "Corporation, City, and Trade of Sheffield," Mr. A. J. Forsdike commented on the fact that all trades were better represented on the Council than the building trade. Councillor A. Neal responded. He expressed the hope that the Federation would be conducive of peace, and not of war, that it would meet the men always in a proper spirit, that it would meet the architects and make them give reasonable conditions under which to execute contracts, and that it would raise the status of the building trade in Sheffield. Councillor G. L. Wood also responded. Mr. J. D. Cook claimed in proposing "The National and Yorkshire Federation of Building Trade Employers" that, although the Federations were at first regarded as antagonistic to the Labour party, they were seen to have worked equally in the interests of the men. Neither a strike nor lock-out could now take place in Sheffield until the matter in dispute had been referred to the conciliation board of the district, and after that to the Yorkshire Federation, then to the Northern centre, and finally to the National Association. If the Federations had done nothing more than render the establishment of conciliation boards possible they had justified their existence. Mr. P. Rhodes (President of the Yorkshire Federation) said that, with the exception of agriculture, the building trade was the largest industry in the kingdom, and employed about 1,000,000 men. He waxed indignant over the proposal to be made in Parliament to sanction picketing, and expressed the opinion that if the law were amended in the way suggested the men's organisations would soon be backing out of the conciliation rules. Similar fears were expressed by Mr. A. Moulson (Bradford). The toast of "The Architects, Surveyors, and Engineers" was proposed by Mr. J. Biggin. Mr. C. F. Wike, City Surveyor, replied, and gave some figures and details as to the continued spread of the city. Last year, he said, plans for 1,982 dwellings were passed by the Council, compared with 1,960 the previous year, which meant that about 10,000 people were being added to the population of Sheffield every year. Plans were also passed last year relating to 2¾ miles of streets, and this year a single plan submitted contained nearly four miles of streets. What had been one of the beauty spots of the city would therefore in all probability in a few years be a "landscape of masonry." Mr. Wike also touched on the question of the unemployed, and intimated that the list of unemployed in Sheffield had contained 2,200 names. Out of that number the city had found work for about 600. Some of the others were unsuitable owing to age and other reasons, but some undoubtedly were wastrels and did not want to work. Replies were also made by Mr. E. M. Gibbs and Mr. E. Holmes. The toast of the evening, "The Sheffield Master Builders' Association," was given by Councillor W. C. Fenton, who referred at some length to the much-discussed question of direct labour. The only difference between direct labour and contract work, he thought, was that direct labour was more expensive than the other. Nevertheless, there were times when direct labour was the class he certainly should employ himself. Alluding then to the attacks so often made upon builders by people anxious to obtain cheap notoriety, he urged the builders not to sit quietly down under them, but to give forcible replies. The President of the Association (Mr. T. Roper) briefly responded, declaring that the Association was not formed for fighting purposes, but to settle matters amicably. "The Visitors" were honoured at the behest of Mr. G. E. Powell, and Mr. J. Bingham and Mr. J. Sissons responded.

THE LONDON GEOLOGICAL FIELD CLASS.—This Class, conducted by Mr. H. G. Seeley, F.R.S., F.G.S., Professor of Geology in King's College, London, is one in which students are taught continuously by the same teacher in the open country and in quarries. The excursions for this year will commence on the last Saturday in April. The departure by railway is usually between two and three o'clock in the afternoon, returning to London between eight and nine o'clock. Some excursions start earlier and return later. The afternoon walk varies from two to six miles. A drive is arranged when the distance is longer. A suitable tea is taken after six o'clock at the hotel or village inn. At the conclusion of tea a connected account of the geological work done during the day is usually given by Professor Seeley. The remainder of the excursions are held during the Whitsun, Summer, and Christmas vacations. Each extends over two or three days, and is unlimited as to distance. Each excursion is planned either to compare the geological deposits of the London district with those found in other parts of the country; or to examine the outcrop of the older rocks which have been proved by engineering work to underlie the London district; or to examine rocks which are not known in the south-east of England, such as the crystalline and volcanic rocks. The excursions of this series for 1906 will be chosen from the following:—A tertiary locality in the Hampshire Basin, the cretaceous rocks of north-west Norfolk, Devizes, or Folkestone; the oolites of Swindon or Cheltenham; and the primary rocks of Clifton, the Mendip Hills, the Welsh Border, or Leicestershire. Particulars of each excursion will be sent to all members of the Class as the details are arranged. The director will issue a report on these longer excursions at the close of the session. The fee is one guinea for all the excursions for the session, 1906.

TOWN HOUSES, OLD AND NEW.—Speaking before the Auctioneers' Institute on the 9th inst. at Hamilton House, Victoria-embankment, on the subject of "Town Houses, Old and New," Mr. W. Henry White said that the housing of the working-classes and garden cities had been so much to the fore during the past year or two that the charms of a mere town house or mansion were in danger of being forgotten. So far as comfort went the modern town house was much more luxurious than was its prototype, and the improvements which had taken place, together with the conditions imposed by various Acts of Parliament, had materially increased the size and costliness of houses, apart from the question of labour and materials. They had also given the architect fresh problems in design. In the hands of educated and trained men he believed that these fresh conditions had been an incentive to design of a high standard, as evidenced in many instances on the great West-end estates, but, unfortunately, the bulk of modern work was not done by highly-trained men, and the results were disappointing. He believed, however, that there was a constantly increasing number of capable men, and he hoped that the building-public and great landlords were beginning to appreciate the better class of work, and that they would assist architects by demanding a high standard of design. Why was there such apathy now amongst the citizens as to the appearance of London streets? The average building owner thought mainly of the matter from a commercial point of view, and there was but little evidence of any large view of citizenship and of "the city beautiful" being to the fore. Until such a view was more general it would be only here and there that beautiful buildings would be erected. It was an age of speed, hurried work, and hurried schemes, and he was convinced that even from a commercial point of view the result was not satisfactory. He drew attention to Park-lane, and remarked that a study of those homes of the millionaires showed an extraordinary conglomeration of buildings. There was no stately laying-out worthy of such a position, but practically each house was different in style from its neighbour.

GREEK ARCHITECTURE.—On the 6th inst. Professor Capper lectured to the members of the Northern Art Workers' Guild, at the Grand Hotel, Manchester, on Greek architecture. His impressions from a recent visit to Greece were, he said, not those usually accepted. The general view was that ancient Greek architecture was purely abstract art, and that once the abstract proportions were mastered they had the correct Greek architecture. He did not believe that view was sound. Another point on which he differed was that once the Greeks had fairly established it, they worked at their system and were content to do nothing but continue practising it. That was an entire misconception of Greek architecture, and one of his impressions had been how greatly progressive their art was.

ORGAN, CARLISLE.—A new organ has been erected in the Warwick-road Presbyterian Church at a total cost of 743*l.* It was built by Messrs. Alexander Young & Son, Manchester, in accordance with designs prepared by Mr. T. Taylor Scott, of Carlisle.

WANDSWORTH PARISH CHURCHYARD.—A portion of the parish churchyard of All Saints, Wandsworth, is to be taken for a widening of South-street in connexion with the London County Council's scheme for tramways and local improvements. The remains to be disturbed will be reinterred in Streatham cemetery, Garratt-lane, at the charges of the Council, who will defray the cost, to the extent of 10*l.*, in respect of each grave taken for the new works.

Legal.

TRIBUNAL OF APPEAL CASE:
EUSTON-ROAD BUILDING LINE.

ON Friday last week the Tribunal of Appeal was engaged for over five hours at the Surveyors' Institution in hearing the appeals of the Worshipful Company of Skinners (as governors of Tonbridge School), Mr. W. F. Howard Flanders (as trustee of the Flanders Estate), and the Metropolitan Railway Company against the certificate of the Superintending Architect of Metropolitan Buildings, dated January 17, 1906, defining the general line of buildings on the south-east side of Euston-road, St. Pancras, between Liverpool-street and Duke's-road. Mr. Horace Avory, K.C., and Mr. Cunningham Glen represented the Skinners' Company; Mr. Macmorren, K.C., the Metropolitan Railway Company; and Mr. Avory and Mr. Jenkins, Mr. Howard Flanders. Mr. Morton

supported the appeal on behalf of the United Kingdom Temperance and Provident Institution; Mr. Payne on behalf of the Euston Theatre Company, while a number of other owners and lessees were represented. The London County Council was represented by Mr. C. Russell, K.C., and Mr. Bailhouse.

Mr. Avory, in opening the case, said the Skinners' Company were the owners of the houses numbered from 45 to 113, and Mr. Flanders from Nos. 23 to 35, and in between was the property of the Euston Theatre Company. The matter of the building line was of the greatest importance to his clients because the line, as it had been fixed by the Superintending Architect, absolutely prevented the advantageous development of the property, the leases of the majority of which were just about to fall in. It also prevented any advantage which the public might have acquired by the widening of this important thoroughfare, for his clients could hardly be expected to give up property for the widening of the road unless they were going to get some corresponding advantage. The line as at present fixed by the Superintending Architect would prevent any buildings being erected on the gardens in front of the houses, and so would prevent the property being developed for modern purposes. On January 3 they invited the Superintending Architect to fix the line of building for their property between Belgrave-street and Mapleton-place. If there had been a general line of buildings in that portion of the Euston-road it would have been the duty of the Superintending Architect to define it, but when he came to his certificate he admitted that in that portion of the Euston-road there was no general line of buildings existing, and so in order to define one he had to extend his view along the road to Liverpool-street to the east and to Duke's-road to the west. He submitted that even if they took that limited view the line which had been laid down could not be justified, but his contention was that in order to define the line it was necessary to take a much larger survey of the road. At present near Chesterton-street there were one-story buildings projecting beyond the line now laid down by the architect, and going west they had at the corner of Mapleton-place buildings of two stories projecting to the pavement-line. Between Mapleton-place and Duke's-road there were a number of buildings which came in front of the line defined by the architect. He submitted that they were bound to take into account these existing buildings because they were in front of the line now laid down by the architect, and further, if they looked at the line laid down, he ventured to doubt if there had been any exercise of judgment at all. It simply looked as if a clerk in the office had drawn a red line along the fronts of the existing houses. Unless the County Council was prepared to show that these one-story houses were erected without consent of the Metropolitan Board of Works, how could it be laid that they were beyond the existing frontage? If they were to take the line from Liverpool-street to Duke's-road then the line of building should be defined to the line occupied by the buildings he had mentioned, viz., the pavement-line. He suggested, however, that they ought not to stop at Duke's-road, but should have regard to the whole of Euston-road and begin at Portland-road station. The question of the building line of Euston-road had already been before the Tribunal.

Mr. Hudson said the Tribunal did fix the building line between Tottenham Court-road and Southampton-street.

Mr. W. Campbell Jones, architect and surveyor to the Skinners' Company, gave evidence with regard to the property belonging to the company, and expressed his disagreement with the line as defined by the Superintending Architect's certificate. He thought the architect should have taken in the whole of Euston-road in fixing the line, and so bring it to the pavement-line.

In cross-examination by Mr. Russell, witness said that if they took the property in blocks, the building line as laid down by the architect would be the right line so far as the blocks were concerned. In their earlier applications the Skinners' Company offered to give up from 25 ft. to 30 ft. of the frontages for the widening of the road if they could build on the remainder of the forecourts.

Mr. Stenning, surveyor, stated that he had examined the part of Euston-road in question owned by the Skinners' Company and was of opinion that the line as laid down by the Superintending Architect was not the general line of building. He considered that the one-story and two-story buildings must be taken into account in fixing the line, and agreed that the line should be drawn from Portland-road station to King's-cross.

Cross-examined, witness said he thought some consideration ought to be paid to the north side of the road in fixing the line. On this side the buildings were brought out. It might be that the Royal Commission on London Locomotion had recommended that the forecourts in Euston-road should not be allowed to be built upon, and he agreed that it would be a good thing to make the road 100 ft. wide.

Other evidence of a similar character was submitted.

Mr. Macmorren addressed the Tribunal on behalf of the Metropolitan Railway Company. He pointed out that his clients had not asked the Superintending Architect to define the line of building, but if the line was now defined between Duke-street and Liverpool-road they would be seriously affected. The railway company had acquired property under an Act of Parliament really for the purposes of ventilation of the railway, and the building line as now laid down would absolutely go to take away a large quantity of their property. The property of the company was one-story property. When the time came to rebuild, he contended that they would be able to do so on their statutory title.

Mr. Russell, K.C., argued that the line ought to be defined in accordance with the previously existing lines for the different blocks of property in the line, and he suggested that there was a well-defined part of Euston-road which lay between Liverpool-street on the east and Euston-square to the west. The Superintending Architect had taken a well-defined part of Euston-road in which the buildings in question were situated, and had dealt with that part with regard to the more important question as to what was the general line of buildings of the street; the reason for the contention that the line should be defined from Portland-road station was obvious. When they got beyond Gower-street there was a considerable number of buildings which were brought right up to the pavement-line and, further, it enabled the appellants to drag in that portion of the road between Tottenham Court-road and Southampton-street with regard to which the Tribunal had settled the line of buildings. Euston-road had a history and up to 1862 it was unlawful to bring any building nearer than 50 ft. from the street, therefore up to that date it was certain that the general line of building was the front of the existing houses, which were 50 ft. from the pavement. Then the question arose whether a new building line had come into existence since 1862. The one-story buildings had been erected on conditions and must be eliminated from the minds of the Tribunal.

The Chairman said it might save time if he intimated that it was in the minds of the Tribunal to limit their finding as to the general line of buildings as between Chesterfield-street and Mapleton-place.

Mr. Avory said if only that piece of the road was taken, then there was no building projecting beyond the line which the Superintending Architect had fixed, and he contended that they must take the other portions of the road into consideration.

The Chairman said their intimation would not prevent argument as to where the building line should be fixed.

Mr. Russell read the conditions on which the one-story buildings were erected, which were to the effect that they were not to be altered or raised without the consent of the Metropolitan Board of Works. As to the two-story buildings, he had no records of how they came to be erected, but the appellants had brought no evidence to show how they came to be there.

Mr. Avory said that if the Tribunal were going to exclude from their consideration those buildings which had been erected with conditions, he should have to ask for a case to be stated for the High Court. As to the two-story buildings, it was a rule of law that a thing was legally done until it was proved to the contrary, and the old Act of Parliament only said that no new building should be erected on a new foundation. There was no law which said that a one-story building was not to be considered in defining a building line.

Mr. Macmorren said that, of course, his clients' property did not come in if the Tribunal limited their finding as intimated.

The Chairman said the Tribunal had decided to uphold the line of building of the Superintending Architect as between Chesterfield-street and Mapleton-place.

On the question of costs, the Tribunal gave the County Council costs as against the Skinners' Company and Mr. Flanders, and awarded the Metropolitan Railway Company costs against the London County Council.

CASE UNDER THE PUBLIC HEALTH ACT.

THE case of the Mayor, etc., of Hornsey *v.* the Birkbeck Freehold Land Society came before a Divisional Court of King's Bench composed of the Lord Chief Justice and Justices Ridley and Darling last week on a case stated by the Justices of Highgate on a complaint by the Hornsey Borough Council against the Society, whereby the Borough Council sought to recover from the Society 72*l.* as the apportioned share of expenses incurred by the Council in the execution of certain works in the Birkbeck-road under the Public Health Act, 1875. The road in question was a highway not repairable by the inhabitants at large, and the boundary between the Hornsey borough and urban district of Friern Barnet runs along the line of the kerb of the footpath on the north side of the road, so that the carriage-way and the footpath on the south side are in the borough of Hornsey and the footpath on the north side is in the urban district of Friern Barnet. It appeared that the Society were the owners of premises abutting on the footpath on the north side of the road within the urban district of Friern Barnet, and these premises were wholly within the district. In July, 1903, the Hornsey Borough Council, under the provisions of the Public Health Act, 1875, caused notices to be served on the Society, calling upon them to make up the parts of the road within the borough of Hornsey, but this work was not done. The work covered by the notice comprised work to the carriage-way and to the footpath on the south side, but did not comprise sewering or any work to the footpath on the north side. The notice was also served on all the owners of premises abutting on the south side of the road, and, as none of the owners executed the work, the Hornsey Borough Council carried it out themselves. The expenses, which amounted altogether to 949*l.*, were attributable 739*l.* to the carriage-way and 210*l.* to the footpath on the south side of the road. The Borough Council's Surveyor apportioned the 210*l.* among the owners of the premises abutting on the south side, and he apportioned the 739*l.* among the owners of all the premises, whether on the north or south side, including the Society whose share of the 739*l.* was 72*l.*, but this sum, although demanded, was not paid. About this time the Friern Barnet Urban District Council served notices under the Act with reference to the footpath on the north side, and, having executed the works, apportioned the expenses on the owners of the premises on the north side only, including the Society, who had paid the amount so apportioned. Certain sewers ran through that part of the road which is within the borough of Hornsey, and these were vested in the appellants. The houses on the south side of the road drained into these sewers. The houses on the north side drained into a sewer which ran along that part of Birkbeck-road within the Friern Barnet Urban District, and which was recently constructed by the Friern Barnet Council at the request and cost of the owners on the north side. The contention on behalf of the appellants was that the fact that the Society's premises were not within the appellants' borough was immaterial under section 150 of the Act. The case for the Society was that their premises, being outside the district of the appellants, were beyond their jurisdiction.

In the result, the Lord Chief Justice, in giving judgment, said it lay on the appellants to establish their right to charge people outside their district. It had been laid down that the authority of one district should not charge or tax the inhabitants of another, and the appellants had failed to show that they had any power to do so.

Justices Ridley and Darling concurred, and the appeal was accordingly dismissed with costs.

Mr. Macmorran, K.C., and Mr. Jenkins appeared for the appellants; Mr. Alexander Glen, K.C., and Mr. Naldrett for the Society.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

4,808 of 1905.—A. DRYSDALE: *Means for Hinging Windows.*

This relates to means for hinging windows, and consists of a hinge plate for securing to the inside of the sash frame, the hinge plate to the window sash being moved at right angles to the fixed plate when it is desired to open a window inwards. The said hinge plate is bifurcated at the top and bottom so that a hinge pin of the window sash can engage therewith to pivot on, the hinge plate being flush with the fixed plate when not in use. To allow the hinge plate to be secured to the window the baton is hinged with an ordinary hinge to open outwardly, the same with regard to the centre or parting baton. After the baton or beadings have been turned outwardly the window is turned, on its hinge, one of the sash ropes being held by a blind check action.

5,806 of 1905.—W. LAVERTY: *Construction of Bricks for Building Purposes.*

This relates to the construction of bricks for building purposes formed with a number of circular bottom and circular side shaped grooves on one or more of the sides or ends of the bricks. The grooves, preferably either two or three in number, may be formed on the side of the brick which is intended to form the outer surface of the wall or building or on both sides, and may be placed longitudinally. One or more grooves may be formed on the end or ends of the brick when these are to form part of the outer surface of the wall. These grooves, which will be narrow at the surface of the brick and be widened out at the bottom or back in oblong circular form, will give a strong hold or key to any coating of cement, stucco, or plaster applied thereto.

10,756 of 1905.—G. GREEN and W. GREEN & CO., LTD.: *Stoves, Ranges, and the like.*

This relates to a combined sitting-room grate and cooking range, comprising a grate proper, partially projecting from the chimney wall and having a movable cover, a chamber or oven

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

above the grate enclosed by the chimney wall, and having an open front capable of being closed by a door or the like, and flues extending from beneath the grate cover for heating the chamber or oven.

12,909 of 1905.—J. WATERHOUSE: *Water Waste Preventer.*

This relates to a water waste preventer, which consists of an ordinary flushing cistern in which is mounted a siphon arrangement composed of a central pipe forming the long leg of the siphon, a cap open at its lower end surrounding the said central pipe, two or more side passages rising from the top of the said cap and opening into a ball or chamber over the said central cap, the said cap, side passages, and ball or chamber forming the short leg of the siphon.

19,786 of 1905.—J. H. JONES: *Combined Sash and Casement Windows.*

This relates to a combined sash and casement window, and has for its object to construct said combined sash and casement window so that it can work in two ways, that is, up and down like an ordinary sash window, and also open inwardly upon hinges at any height required, thus combining two windows in one without requiring any more brickwork "reveal" than is usual in ordinary windows.

3,708 of 1905.—P. KUHNE: *Combination Concrete Steel Construction.*

This relates to a combination concrete steel construction having two or more sections or floor fillings, separated from each other by a beam or beams and reinforced by tension-rods, which cross the lines of shear, and consists in an arrangement of the tension-rods such that the tension-rods of adjacent sections or fillings overlap each other at suitable intervals apart, the tension-rods of each section or filling extending beyond the beam or beams into the adjacent section or filling.

26,553 of 1905.—A. HEMSLEY: *Means for and the Method of Cleaning Sink and Similar Waste Pipes.*

This relates to means for cleannig sink and similar waste pipes, comprising a cylindrical vessel which is, or can be, closed at one end, and at the other end is provided with a rubber or similar washer, by which a joint can be made between the appliance and the sink or the like. The appliance is charged with chemicals capable of generating gas or steam, and when the charged appliance is placed in position over the waste pipe the gas or steam generated passes through the waste pipe and effectually removes all objectionable matter which accumulates therein.

27,231 of 1905.—R. L. HARRISON: *Water Closets.*

This relates to water-closets that are flushed with waste water from a sink or other sources, and consists in the combination with a closet pan and a waste water cistern of a jet pump connected either to the main or to a cistern placed in such a position for the water therefrom to have a sufficient force to cause the water issuing from the nozzle of said pump to draw up waste water from the cistern, which, with the addition of the fresh water issuing from the pipe through the nozzle, will be forced through the inlet.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 1.—By SADLER & BAKER (at Camberley).

Camberley, Surrey.—The Avenue, "Stanton" and "Ellastene," f., y.r. 125*l.* £2,350

March 2.—By G. E. SWORDER & SONS (at Bishop's Stortford).

Bishop's Stortford, Herts.—Cambridge-rd., etc., a freehold bungalow and enclosure of land, area 6 acres 2,600

By H. J. BROMLEY (at Shrewsbury).

Shrewsbury.—7, 8, and 8a, St. Mary's-pl., f., y.r. 105*l.* 1,325

9, St. Mary's-pl., f., y.r. 45*l.* 650

March 3.—By WRIGHT & SCRUBY (at Cambridge).

Great Shelford, Cambs.—"Carlton House" and 1 a. 1 r. 17 p., f., y.r. 70*l.* 1,380

Little Shelford, Cambs.—Three freehold cottages and plot of land 113

Whittlesford, Cambs.—"Wells Farm," 100 a. 2 r. 23 p., f., y.r. 68*l.* 15s. 1,020

March 5.—By A. M. NEWCOMBE.

Beckenham.—19, Mackenzie-rd., f., p. 325

97 and 99, Birkbeck-rd., u.t. 999 yrs., g.r. 12*l.*, w.r. 65*l.* 500

March 6.—By J. BARTON & CO.

New Cross.—50, Billington-rd., u.t. 51 yrs., g.r. 5*l.*, w.r. 42*l.* 15s. 365

By C. W. DAVIES & SON.

Islington.—45, College-st., u.t. 10 yrs., g.r. 7*l.*, e.r. 36*l.* 140

St. Peter's-st., f.g.r. 6*l.*, reversion in 83 yrs. .. 155

65, Colebrooke-row, f., y.r. 34*l.* 550

81, St. Peter's-st. (s.), u.t. 39½ yrs., g.r. 8*l.*, y.r. 40*l.* 270

Stoke Newington.—13, 15, 17, 19, and 23, Lordship-terrace, u.t. 13 yrs., g.r. 8*l.*, y.r. 104*l.* 335

Boxton.—2, 4, 6, and 8, Ivy-st., 5 to 13 (odd), Ivy-la., u.t. 17½ yrs. and 18½ yrs., g.r. 7*l.* 13s., w.r. 175*l.* 10s. 650

Holloway.—7, Cardozo-rd., u.t. 61 yrs., g.r. 7*l.* 10s., e.r. 50*l.* 480

New Barnet, Herts.—East Barnet-rd., "St. Albans House" (s.), f., y.r. 26*l.* 410

By BEARD & SON.

Paddington.—20 and 21, Church-pl. (off-licensed premises, etc.), u.t. 31 yrs., g.r. 4*l.*, y.r. 110*l.* £1,550

By H. DONALDSON & SONS.

Dalston.—124, Forest-rd., u.t. 44½ yrs., g.r. 7*l.* 3s., e.r. 40*l.* 350

Lambeth.—35, Upper Marsh, c., y.r. 34*l.* 400

By TOMKINS & CHADWICK (at Abergavenny).

Abergavenny, Mon.—75, 77, and 79, Park-rd., f., y.r. 48*l.* 725

March 7.—By FRANK, JOLLY, & JAMES.

Stratford.—21, 23, and 25, Howards-rd., u.t. 60 yrs., g.r. 12*l.*, w.r. 85*l.* 16s. 550

Clapton.—Goulton-rd., f.g.r. 8*l.*, reversion in 56 yrs. 235

Powerscroft-rd., f.g.r. 10*l.* 10s., reversion in 70 yrs. 270

By KNIGHT, FRANK, & RUTLEY.

South Kensington.—Pelham-cres., etc., i.g. rents 32*l.*, u.t. 12½ yrs., g.r. 10*l.* 180

By MARTIN, WHITE, & Co.

Dulwich.—61, East Dulwich-gr., u.t. 64 yrs., g.r. 10*l.*, p. 400

By J. S. RICHARDSON.

Battersea.—13, Kassala-rd., u.t. 68 yrs., g.r. 7*l.*, y.r. 36*l.* 385

By C. SPARROW & SON.

Finchley.—1, 2, and 3, Hatherton-ter., y.r. 66*l.*; Hendon-la., "The Old House," "Holly Cottage," and shop and premises adjoining, f., y.r. 92*l.* 5s.; also f.g.r. 7*l.* 10s., reversion in 65 yrs. (in one lot). 2,400

Dollis-av., "Elsmere," f., p. 1,295

By DOUGLAS YOUNG & CO.

Notting-hill.—128, Cornwall-rd., u.t. 45½ yrs., g.r. 8*l.*, w.r. 59*l.* 16s. 330

Clapham.—42 and 44, Fenwick-pl., u.t. 80 yrs., g.r. 10*l.*, w.r. 78*l.* 550

143, 145, and 147, Lyham-rd. (s.), u.t. 43 yrs., g.r. 7*l.* 1s., w.r. 106*l.* 12s. 790

Southall.—140 and 142, Abbott's-rd., f., w.r. 46*l.* 16s. 530

By HENRY HENDRIKS (at Birmingham).

Birmingham.—52 to 60 (even). Steelhouse-la. (business premises, etc.), area 830 yds., u.t. 73 yrs., g.r. 200*l.*, g.r. 445*l.* 2,000

Handsworth, Staffs.—45 and 47, Linwood-rd., f., y.r. 50*l.* 910

Small Heath, Worc.—29, Herbert-rd., f., p. 350

March 8.—By FAREBROTHER, ELLIS, & CO.

Walworth.—Walworth-rd., f.g. rents 122*l.*, reversion in 56 and 54 yrs. 4,000

By W. A. HEAD.

Battersea.—3, 5, 7, and 9, Salcott-rd., f., y.r. 128*l.* 1,735

Tooting.—52 and 54, Defoe-rd., u.t. 72½ yrs., g.r. 10*l.*, w.r. 58*l.* 10s. 440

By PERCIVAL HODSON.

Hackney Wick.—Wick-rd., "Elephant and Castle" Hotel, i.g.r. 105*l.*, u.t. 31½ yrs., g.r. 20*l.* 1,100

Bromley.—Norris-rd., i.g.r. 44*l.* 7s., u.t. 56 yrs., g.r. 9*l.* 555

Eagling-rd., etc., i.g.r. 57*l.* 19s., u.t. 56 yrs., g.r. 14*l.* 15s. 645

Hoxton.—Hyde-rd., f.g.r. 10*l.*, reversion in 105 yrs. 255

Palmer's Green.—Green Lanes, "Kimberley," f., p. 1,100

By C. C. & T. MOORE.

Mile End.—16 and 18, Longnor-rd., u.t. 58½ yrs., g.r. 7*l.* 10s., w.r. 63*l.* 14s. 345

Plaistow.—33, Grafton-rd. North, f., p. 250

Lewisham.—100, Manor-pk., u.t. 91½ yrs., g.r. 6*l.*, y.r. 45*l.* 300

By NEWBON, EDWARDS, & SHEPHARD.

Crouch Hill.—No. 25 (s.), u.t. 5[illegible] yrs., g.r. 10*l.*, y.r. 85*l.* 900

Hornsey.—9, Rathcoole-parade (s.), u.t. 86 yrs., g.r. 16*l.*, y.r. 70*l.* 700

Sutton, Surrey.—1, Manor-parade (s.), u.t. 90 yrs., g.r. 30*l.*, y.r. 80*l.* 900

By H. W. SMITH.

Whitechapel.—St. Mark's-st., "Tenter House," f., w.r. 91*l.* 960

Haggerston.—10, Cester-st., f., w.r. 31*l.* 4s. .. 265

By STIMSON & SONS.

Clapham.—39 to 46, Cavendish-gdns. (flats), u.t. 94½ yrs., g.r. 75*l.*, y.r. 451*l.* 19s. 1,000

Clapham-rd., f.g. rents 60*l.*, reversion in 54½ yrs. 2,220

243 and 246, Clapham-rd. (s.), f., y.r. 165*l.* ... 3,000

Poplar.—Buxton-ter., f.g. rents 131*l.*, reversion in 72½ yrs. 2,770

Plaistow.—Barking-rd., f.g.r. 32*l.*, reversion in 74½ yrs. 680

Croydon.—Mayday-rd., f.g.r. 7*l.* 7s., reversion in 50 yrs. 165

Mayday-rd., f.g.r. 22*l.* 7s., reversion in 71 yrs. 500

Old Kent-rd.—Hatcham-rd., f.g.r. 8*l.*, reversion in 54 yrs. 205

By A. W. TAYLOR & CO.

Putney.—81, Fawe Park-rd., f., e.r. 42*l.* 18s. .. 370

97, Putney Bridge-rd., u.t. 92 yrs., g.r. 8*l.*, y.r. 36*l.* 340

March 9.—By ABERCROMBIE & EDMUNDS.

Edgware, Middx.—Stone-gr., "Oakleigh" and 9 a. 1 r. 11 p., f., y.r. 170*l.* 3,775

Stone-gr., "Rose Cottage," f., y.r. 40*l.* 1,325

By FULLER & RUDDOCK.

Shepherd's Bush.—43, Melina-rd. (s.), f., y.r. 47*l.* 10s. 500

By GARNHAM & SIMPSON.

Tooting.—3, 6, and 7, Devonshire-ter., f., e.r. 84*l.* 1,065

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PUBLISHER'S NOTICES

Nat. Tel., 6112, Gerrard. Telegrams, "The Builder, London."

THE INDEX (with TITLE-PAGE) for VOLUME LXXXIX. (July to December, 1905) was given as a supplement with the issue of January 13th.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (Cloth), with Strings, price 9d. each.

THE EIGHTY-NINTH VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, etc., etc.

Six lines or under ..... 6s. 6d.
Each additional line ..... 1s. 0d.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

Terms for series of Trade advertisements, and for front page and other special positions, on application to the Publisher.

SITUATIONS WANTED (Single-handed—Labour only).

Four lines (about thirty words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps must not be sent, but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," Catherine Street, W.C.

Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

ADVERTISERS in "THE BUILDER" may have *Replies addressed to the Office*, Catherine Street, Covent Garden, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

N.B.—The Reply Boxes are not intended for trade lists, circulars, and the like; should these be received, they cannot (if noticed) be forwarded.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. (By post (carefully packed) 1s.

MEETINGS.

SATURDAY, MARCH 17.

Royal Institution.—Professor J. J. Thomson, M.A., F.R.S., on "The Corpuscular Theory of Matter," III. 3 p.m.

MONDAY, MARCH 19.

Royal Institute of British Architects.—Mr. F. W. Troup and Mr. Lawrence Weaver on "Lead-work," with lantern illustrations. 8 p.m.

Society of Arts (Cantor Lectures).—Professor Vivian B. Lewes on "Fire, Fire Risks, and Fire Extinction," II. 8 p.m.

Institute of Sanitary Engineers.—Mr. S. L. Bartholemew on "Sanitation in South Africa." 8 p.m.

TUESDAY, MARCH 20.

Architectural Association (Camera and Cycling Club).—Demonstration on "Lantern Slides," illustrated with lantern slides. 7.30 p.m.

Institution of Civil Engineers.—Mr. H. Shelford Bidwell on "The Outer Barrier, Hodbarrow Iron Mines, Millom, Cumberland." 8 p.m.

Royal Institution.—Mr. J. E. Marr, M.A., F.R.S., on "The Influence of Geology on Scenery," I. 5 p.m.

Society of Arts (Applied Art Section).—Mr. Cyril Davenport, F.S.A., on "English Royal Heraldry." 8 p.m.

Institute of Sanitary Engineers (Students' Lectures).—Mr. A. E. Abbott on "Heating and Hot Water Supply." 7 p.m.

WEDNESDAY, MARCH 21.

Society of Arts.—Mr. B. B. Redwood on "Motor Boats." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—(1) Quarterly meeting of directors, 7 p.m.; (2) ordinary meeting of the members, 8 p.m.

Royal Meteorological Society (Institution of Civil Engineers, Great George-street).—Mr. Hugh Robert Mill, D.Sc., F.R.G.S., on "South Africa as Seen by a Meteorologist," illustrated by a series of lantern slides from photographs taken during the tour of the British Association in 1905. 7.30 p.m.

THURSDAY, MARCH 22.

Royal Institution.—Professor B. Hopkinson, M.A., on "Internal Combustion Engines," with experimental illustrations, I. 4 p.m.

Carpenters' Hall, London Wall (Free Lectures on Matters Connected with Building).—The Right Hon. Sir H. Maxwell, Bart., M.P., on "The Neglected Resources of Our British Woodlands." 8 p.m.

Junior Institution of Engineers.—Visit to the works of Messrs. Fraser & Chalmers, Erith. 6.15 p.m.

FRIDAY, MARCH 23.

Architectural Association.—Mr. A. W. Soames, M.P., on "The London Club House of Last Century." 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. F. K. Stevens on "Waves." 8 p.m.

SATURDAY, MARCH 24.

Architectural Association.—Fifth spring visit to flats in High-street, Kensington. Meet in Hornton-street 1.30 p.m.

Royal Institution.—Professor J. J. Thomson, M.A., on "The Corpuscular Theory of Matter," IV. 3 p.m.

Royal Sanitary Institute.—A provincial sessional meeting to be held at the Town Hall, Leicester, when a discussion will take place on "Cremation," with particulars of the Leicester Corporation Crematorium. The

discussion will be opened by Mr. C. Killick Millard, M.D., D.Sc., Medical Officer of Health, Leicester. 11 a.m.

Edinburgh Architectural Association.—Visits to the new offices of the North British and Mercantile Insurance Co., and new premises of the Professional and Civil Service Supply Association, Ltd.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance. The Editor cannot undertake to read and consider articles offered for acceptance unless they are type-written.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 7 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 4 0	" " "
Picked Stocks for Facings	2 15 0	" delivered.
Flettons	1 5 0	" at railway depôt.
Red Wire Cuts	1 11 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	3 15 0	" " "
Do. Bullnose	4 0 0	" " "
Best Stourbridge Fire Bricks	3 14 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	12 0 0	" " "
Headers	11 0 0	" " "
Quoins, Bullnose, and Flats	16 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamferred, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	" " "
Quoins, Bullnose, and Flats	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamferred, Squints	14 0 0	" " "
Second Quality White and Dipped Salt Glazed	2 0 0	" less than best.

	s. d.	
Thames and Pit Sand	6 9	per yard, delivered.
Thames Ballast	5 3	" "
Best Portland Cement	24 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8¼	" "
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½	" "

	s. d.	
Ancaster in blocks	1 10	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 2	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "

STONE (continued).

YORK STONE—*Robin Hood Quality.*		
Scappled random blocks	2 10	per ft. cube, deld. rly. depôt.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super., "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0 11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "
HARD YORK—		
Scappled random blocks	3 0	per ft. cube, "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft. super., "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides slabs (random sizes)	1 2	" "
in. self-faced random flags	0 5	" "

	s. d.	
Hopton Wood (Hard Bed) in blocks	2 0	per ft. cube, deld. rly. depôt.
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.
" " " 3 in. sawn both sides random slabs	1 0	" "
" " " 2 in. do.	0 8½	" "

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20×12 " "	13 17 6	" "
20×10 first quality "	13 0 0	" "
20×12 " "	13 15 0	" "
16×8 " "	7 5 0	" "
20×10 best blue Portmadoc	12 12 6	" "
16×8 " "	6 12 6	" "
20×10 best Eureka unfading green	15 17 6	" "
20×12 " "	18 7 6	" "
18×10 " "	13 5 0	" "
16×8 " "	10 5 0	" "
20×10 permanent green	11 12 6	" "
18×10 " "	9 12 6	" "
16×8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000 at rly. depôt.
Hip and Valley tiles	3 7	per doz. "
Best Broseley tiles	50 0	per 1000 "
Do. Ornamental tiles	52 6	" "
Hip and Valley tiles	4 0	per doz. "
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000 "
Do. Ornamental do.	60 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 0	" "
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 "
Do. Ornamental do.	54 6	" "
Hip tiles	4 1	per doz. "
Valley tiles	3 8	" "
Best " Rosemary " brand plain tiles	48 0	per 1000 "
Best Ornamental tiles	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 8	" "
Best " Hartshill " brand plain tiles, sand-faced	50 0	per 1000 "
Do pressed	47 6	" "
Do. Ornamental do.	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 6	" "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	" "
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	... 10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	... 9 10 0
Foreign Sawn Boards—		
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"

	At per load of 50 ft.	
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.)	3 12 6	... 3 15 0
Small timber (6 in. to 8 in.)	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	... 3 15 0

JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 11 in.	18 10 0	... 20 0 0
" " 3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0

WOOD (continued).

JOINERS' WOOD (continued)—	At per standard. £ s. d.	£ s. d.
White Sea and Petersburg—		
First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
" " 3 in. by 9 in.	13 10 0	... 14 10 0
Battens	11 0 0	... 12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	... 14 10 0
" " 3 in. by 9 in.	12 10 0	... 13 10 0
" " battens	10 0 0	... 11 0 0
Pitch-pine: deals	16 10 0	... 20 0 0
Under 2 in. thick extra	0 10 0	... 1 0 0
Yellow Pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Yellow Pine oddments	28 0 0	"
Kauri Pine—Planks, per ft. cube	0 3 6	... 0 5 0
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 3 0	... 0 3 6
Small " "	0 2 6	... 0 2 9
Wainscot Oak Logs, per ft. cube	0 5 0	... 0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 8	... 0 0 9
¼ in. do. do	0 0 7	... —
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	... 0 1 6
Selected, Figury, per ft. super. as inch	0 1 6	... 0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	... 0 1 0
Teak, per load	17 0 0	... 22 0 0
American Whitewood Planks, per ft. cube	0 4 0	... 0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	... 0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	... 0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	... 1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	... 0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	... 0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	... 0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	... 0 13 6
1 in. by 7 in. " "	0 14 0	... 0 18 0
¾ in. by 7 in. white " "	0 10 0	... 0 11 6
1 in. by 7 in. " "	0 12 9	... 0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	7 0 0	... 7 10 0
Compound Girders, ordinary sections	9 0 0	... 10 0 0
Steel Compound Stanchions	12 0 0	... 13 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0	... 10 0 0
Flitch Plates	9 0 0	... 10 0 0
Cast Iron Columns and Stanchions including ordinary patterns	7 10 0	... 8 10 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	8 0 0	... 8 10 0
Staffordshire Crown Bars, good merchant quality	8 10 0	... 9 0 0
Staffordshire "Marked Bars"	10 10 0	... —
Mild Steel Bars	8 15 0	... 9 0 0
Hoop Iron, basis price	9 5 0	... 9 10 0
" Galvanised	17 0 0	... —

("And upwards, according to size and gauge.)

Sheet Iron Black—		
Ordinary sizes to 20 g.	9 10 0	... —
" " 24 g.	10 10 0	... —
" " 26 g.	12 0 0	... —
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	14 0 0	... —
Ordinary sizes to 22 g. and 24 g.	14 10 0	... —
" " 26 g.	15 0 0	... —
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	17 0 0	... —
" " 22 g. and 24 g.	17 10 0	... —
" " 26 g.	19 0 0	... —
Galvanised Corrugated Sheets—		
Ordinary sizes 6 ft. to 8 ft. 20 g.	14 0 0	... —
" " 22 g. and 24 g.	14 10 0	... —
" " 26 g.	15 15 0	... —
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 10 0	... —
Best Soft Steel Sheets, 22 g. & 24 g.	12 10 0	... —
" " 26 g.	14 15 0	... —
Cut Nails, 3 in. to 6 in.	9 10 0	... 9 15 0

(Under 3 in., usual trade extras.)

LEAD, &c.	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up.	18 5 0	... —
Pipe in coils	18 15 0	... —
Soil pipe	21 5 0	... —
Compo pipe	21 5 0	... —
ZINC—Sheet—		
Vieille Montagne ton	32 10 0	... —
Silesian	32 0 0	... —
COPPER—		
Strong Sheet per lb.	0 1 0	... —
Thin " "	0 1 1	... —
Copper nails "	0 0 11	... —
BRASS—		
Strong Sheet "	0 0 11	... —
Thin " "	0 1 0	... —
TIN—English Ingots "	0 1 8	... —
SOLDER—Plumbers' "	0 0 8	... —
Tinmen's "	0 0 10	... —
Blowpipe "	0 0 11	... —

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds	2½d. per ft. delivered
" fourths	1¾d. " "
21 oz. thirds	3¼d. " "
" fourths	2¾d. " "
26 oz. thirds	4¼d. " "
" fourths	3¾d. " "
32 oz. thirds	5d. " "
" fourths	4¼d. " "
Fluted Sheet, 15 oz.	3¼d. " "
" 21 oz.	4¼d. " "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.		
Hartley's	2d.	per ft. delivered.
"	2½d.	" "
"	2½d.	" "
Figured and Oxford Rolled		
"Oceanic" Glass, white	4d.	" "
Do. " tinted	5½d.	" "

OILS, &c.		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 10
" " " in barrels	"	0 1 11
" " " in drums	"	0 2 1
Boiled " " in pipes	"	0 1 0
" " " in barrels	"	0 2 1
" " " in drums	"	0 2 3
Turpentine in barrels	"	0 4 0
" in drums	"	0 4 2
Genuine Ground English White Lead	per ton	22 10 0
Red Lead, Dry	"	21 10 0
Best Linseed Oil Putty	per cwt.	0 7 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ALDBOURN.—For the erection of a Primitive Methodist church at Aldbourn, Wilts, for the Aldbourn Primitive Methodist Trustees. Mr. T. Colborne, architect, Swindon:—

Edwards & Son	£487 0 0	Tydeman Bros., Swindon*	£418 10 0
Hedges Bros.	474 0 0		
Moulding & Son	440 14 0		

BANGOR.—For remaking streets (Farnham-road, Somerset-avenue, etc.), for the Urban District Council. Mr. E. L. Wood, C.E., Town Surveyor, Bangor:—

Farnham-road.

Caulfield & Pollock, Bangor	£401 18 0

Kinnegor.

J. Rose & Sons, Belfast	244 9 4

Somerset-avenue.

Caulfield & Pollock, Bangor	165 6 0

Wrackey Loaning.

W. Legg, Bangor	58 10 0

BUNCRANA.—For constructing outfall sewer, Buncrana main drainage, for the Inishowen Rural District Council. Mr. T. Johnston, Engineer, East Wall, Derry:—

J. Lowden & Co.	£1,129 0 0	H. Campbell	£680 0 0
B. Colhoun	990 0 0	Shannon & Routledge	671 0 0
M. Green	901 18 10	P. McCallion	650 0 0
M. Sweeney	887 10 0	J. Mullin, Bohillion Tower, Burt, Derry*	644 0 0
J. Ross & Son	860 0 0		
E. Hughes	789 0 0		
Fleming Bros.	697 1 0		

CARLISLE.—For erecting a small-pox hospital, administrative block, mortuary, etc., Bell Vue, for the Corporation. Mr. H. C. Marks, City Engineer and Surveyor, 36, Fisher-street, Carlisle:—

J. Baty & Sons	£3,642 10 0	J. Laing & Son	£3,296 0 0
W. Latimer	3,484 2 6	J. H. Reed & Sons	3,293 14 10
G. Hill	3,386 16 6	J. & R. Bell	3,281 0 0
W. Martin	3,365 0 0	E. J. Hill	3,263 17 7
W. Baty	3,305 7 7	J. Beaty	3,256 9 7
J. Beaty	3,300 10 0	J. Hindson*	3,173 0 0

[All of Carlisle.]

CLAVERING (Essex).—For erecting a farmhouse, for Trustees of the Dewhurst Charity, Cheshunt. Messrs. Crawter, surveyors, Cheshunt:—

Glascock & Son	£820 0	Robinson	£665 0
B. Dix	800 0	Jennings & Grenfell	650 0
Rowley Bros.	785 0	W. Lawrence & Son	648 0
R. E. Winch	748 16	G. Smith	645 0
G. Custerson	740 0	Guest, Suckett, & Son	625 0
C. E. Kenworthy	718 10	J. R. Bennett & Sons	517 10
Bell & Sons	707 0		
C. Chapman	692 10		
Scales & Robbins	683 0		
Gimson & Co.	679 0		
T. H. Staines	675 0		

COOLMORE.—For erecting a dwelling-house. Mr. F. G. Townsend, engineer, Ballyshannon:—

J. McClay	£535 9 10	R. Colhoun, Londonderry*	£496 0 0
McDaid Bros.	505 0 0		

COWPEN.—For resewering and paving portion of Back Bowes-street, Waterloo, for the Urban District Council. Mr. R. Grieves, Surveyor, Seaforth-street, Waterloo, Blyth:—

E. Edgar	£121 15 0	J. Robson, Newcastle-on-Tyne*	£102 0 6
G. R. Simpson	108 18 0		

DARTFORD.—For erecting two new Council schools, for Kent Education Committee. Mr. W. Harston, architect, 8, Hythe-street, Dartford:—

W. Pollock	£8,778	Friday & Ling	£7,150
F. Johnson	7,654	W. F. Blay	7,050
R. Avard	7,595	J. Gillingham & Sons	7,000
W. L. Adcock	7,506	J. Gutteridge	6,995
Thomas & Edge	7,420	Green & Co.	6,967
Mattock & Parsons	7,399	J. Lonsdale	6,948
W. Patrick	7,390	G. E. Wallis & Son, Ltd.	6,838
W. H. Archer & Son	7,309	J. G. Johnson & Sons	6,769
W. Smith & Sons	7,257		
F. & G. Forster	7,226		
Gough & Co.	7,184		

FRINTON-ON-SEA.—For storm overflow from sewer opposite Second-avenue, with sea outfall, for the Urban District Council. Mr. E. M. Bate, Engineer and Surveyor, Council Offices, Frinton:—

Storm Overflow.

A. E. Farr, Frinton*	£380 11 4

Street Works.

A. E. Farr, Frinton*	1,725 6 6

[Thirteen other tenders.]

GREAT WAKERING (Essex).—For new church and vestries, Great Wakering, Essex, for the Trustees of the Primitive Methodist Church. Mr. Charles Cooke, architect and surveyor, Tower-buildings, High-street, Southend-on-Sea:—

H. Wilkinson	£905 10 0	Wiggins	£709 4 0
A. J. Harris	804 0 0	R. Elvy	689 10 0
Alp & Ventris	752 17 3	Burrell, Shoeburyness*	611 0 0
Burgess & Bailey	722 4 3		

GUILDFORD.—For constructing surface water drainage, for the Town Council. Mr. C. G. Mason, Borough Engineer and Surveyor, Guildford:—

F. Osman, Four Posts, Southampton	£5,750

[Twenty-three tenders.]

GUILDFORD.—For private street works, Gardner-road, Linden-road, Chesnut-road Sycamore-road, etc.), for the Town Council. Mr. C. G. Mason, Borough Surveyor, Tun's-gate, Guildford:—

G. A. Franks, Guildford	£83 0 0	Linden-road
	109 5 0	Chesnut-road
	137 0 0	Sycamore-road
	171 16 6	Acacia-road
	119 10 0	Grange-road
	101 2 6	Elm Grove-road
Cunningham, Forbes, & Co., Fleet, Hants	246 10 2	Gardner-road
Shelborne & Co., London	559 0 0	Bell Fields.

HINCKLEY.—For sewage disposal works, Burbage, for the Rural District Council. Mr. F. C. Cook, Surveyor, Nuneaton. Quantities by Surveyor:—

R. H. B. Neale, Ltd.	£7,870 0 0	A. Braithwaite & Co.	£5,283 8 1
G. Holloway	7,156 7 0	G. Rutter	5,278 17 0
Johnson & Langley	6,724 0 6	W. Moss	5,167 0 0
Orson, Wright, & Co.	6,385 19 3	W. Brigg	5,137 8 4
T. Smart	6,255 0 0	H. H. Barry	5,051 1 5
Ward & Tetley	6,242 13 6	W. Waring & Sons	5,032 1 10
Jowett Bros.	6,199 9 3	W. E. Bennett	4,990 0 0
Smedley & Booth	5,995 3 7	Smith & Co.	4,933 8 4
G. Bell	5,778 16 4	J. T. Ball	4,874 8 1
A. J. Cottle	5,707 10 3	A. Jewell	4,861 11 5
A. E. Palmer	5,652 6 5	T. Hickman	4,777 1 11
J. E. Johnson & Son	5,425 0 0	G. Mackey & Son	4,743 17 8
Johnson Bros.	5,400 0 0	T. H. Macdonald, Oxford*	4,693 18 4
W. Manders	5,323 17 11		

JARROW.—For building a fire-station in Wylam-street, for the Sanitary Authority:—

J. Barrow	£1,097 0 0	O. Pescod	£933 14 3
T. Lumsden	1,020 0 0	J. A. M. Henderson	928 3 6
W. Kennedy	975 0 0	S. Craig & Son*	891 9 11
Glen & Moffett	957 16 7		

[All of Jarrow.]

LLANDUDNO.—For County school. Mr. G. A. Humphreys, architect, Llandudno:—

E. Hughes	£8,782 0 0	E. Owen	£7,475 12 0
E. Jones & Son	8,615 0 0	R. L. Roberts	7,345 0 0
T. & J. Owen	8,569 3 10	G. Roberts & Bros.	7,287 0 0
T. Huxley	7,950 0 0	R. Costain & Sons	7,196 0 0
J. T. Jones	7,883 0 0	G. Roberts	7,155 0 0
J. Dallow & Son	7,623 0 0	Hughes & Stirling	6,986 0 0
T. Jones	7,722 0 0	H. Hughes, Llandudno*	6,362 0 0
H. Smith	7,760 0 0		
W. Gradwell & Co.	7,536 0 0		

LANCHESTER.—For erecting boiler-house and chimney, etc., at the Union Workhouse, for the Guardians. Messrs. Newcombe & Newcombe, architects, 89, Pilgrim-street, Newcastle-on-Tyne:—

S. Easten	£1,600 16 0	J. Lant	£1,249 0 0
W. G. Armstrong	1,563 17 6	F. T. George	1,160 0 0
W. Hall, Crook	1,536 13 8	J. Arundels (Exors.)	1,135 0 0
W. Lister	1,473 18 0	J. Robson, Esh Winning, Co. Durham*	1,091 0 0
R. Thompson	1,356 0 0		
T. Hutchinson	1,269 0 0		

LANCHESTER.—For new Lancashire boilers, pump, heater, tank, valves, etc., for the Guardians. Messrs. Newcombe & Newcombe, architects, 89, Pilgrim-street, Newcastle-on-Tyne:—

Blan & Bros. & Co.	£1,745 10 0
Teasdale Bros., Ltd.	1,737 10 0
W. Richardson & Co.	1,664 15 0
H. Walker & Son, Ltd.	1,592 17 0
J. Abbott & Co., Ltd.	1,585 0 0
Dinning & Cooke	1,538 0 0
Spurr, Inman, & Co., Ltd.	1,505 2 6
D. Adamson & Co.	1,498 0 0
W. Arnott & Co.	1,435 15 7
Hebburn Boiler Co.	1,435 0 0
Davey Bros., Ltd.	1,425 10 0
Hawkesley, Wild, & Co.	1,415 0 0
Ruston, Proctor, & Co., Ltd.	1,411 0 0
Holdsworth & Sons	1,410 15 9
J. Thompson	1,387 10 0
H. J. Horsfield, Ltd.	1,330 0 0
Clayton, Son, & Co.	1,284 0 0
Hewitt & Kellett, Bowling Ironworks, Bradford*	1,276 1 6

LANCHESTER.—For domestic hot and cold water supply and heating installation at the Union Workhouse, for the Guardians. Messrs. Newcombe & Newcombe, architects, 89, Pilgrim-street, Newcastle:—

Bland Bros. & Co.	£2,282 4 0
H. Walker & Son, Ltd.	2,058 10 0
Dargue, Griffiths, & Co.	2,048 0 0
J. Metcalf	2,001 7 0
R. J. Ward Co.	1,950 0 0
Brightside Foundry and Engineering Co., Ltd.	1,946 0 0
Dinning & Cooke	1,927 0 0
W. Richardson & Co.	1,835 10 0
F. W. Jefferson	1,800 10 10
J. France & Sons	1,607 13 0
R. T. Vaux & Son, Sunderland*	1,510 0 0

LINCOLN.—For fire-escape staircases, Lincoln Union Workhouse. Messrs. W. Watkins & Son, architects, Lincoln:—

	One Stair.	Three Stairs.
W. G. Smith & Co.	£192 10 0	£468 10 0
F. E. Bradbury	114 15 6	283 11 0
J. Hall & Son	112 0 0	262 0 0
Moorwood, Sons, & Co., Ltd.	101 0 0	245 0 0
Wilmer & Sons	100 0 0	240 0 0
F. Fox	95 0 0	238 15 0
W. G. Henton & Sons	111 2 0	230 14 0
J. W. Ward, Ltd.	85 10 0	221 12 6
Haywards Bros., & Eckstein	91 0 0	220 0 0
McDowall, Steven, & Co., Ltd.	105 12 6	217 5 0
J. Hitchen & Son, Ltd.	82 10 0 / 77 10 0	216 0 0 / 210 0 0
Boulton & Paul, Ltd.	80 17 6	200 2 6
Motley & Green	85 10 0	194 10 0
W. Gratrix & Sons	89 12 0	191 16 0
General Iron Foundry Co., Ltd.	84 15 0	189 10 0
G. Wright, Ltd.	83 17 6	183 16 0
Cort, Paul, & Cornick	72 0 0	182 0 0
R. Carr & Co.	74 3 6	180 16 0
F. A. Norris & Co.	79 0 0	178 0 0
Haward Bros., London*	71 0 0	172 0 0

LLANGADOCK.—For Gosen Chapel (renovation), Llangadock. Messrs. G. Morgan & Sons, architects, Carmarthen:—

M. Moses, Llangadock*	£896

LONDON.—For fixing a complete electric light wiring installation at the St. George-in-the-East Baths and Washhouses, Betts-street, E., for the Metropolitan Borough of Stepney. Mr. M. W. Jameson, Borough Engineer, Municipal Offices, 15, Great Alie-street, Whitechapel, E.:—

Donnison, Sillem, & Co.	£465 0 0	W. Palmer	£236 12 0
Fergusson & Sons‡	420 0 0	Holmes & Cooper	225 10 0
Lawrences, Ltd.	345 0 0	J. Potter & Sons	225 0 0
G. & H. Turner	306 14 0	Ward Bros.	217 0 0
J. Defries & Sons, Ltd.	302 0 0	J. Richmond & Co.	210 0 0
F. A. Glover	282 5 0	Electrical Engineering & Maintenance Co.	210 0 0
Jackson Bros.	275 0 0	W. J. Fryer & Co.	205 0 0
Smeeton & Page	267 8 3	E. D. Pearcey	202 9 0
D. Assersohn	256 10 0	A. Sweet	194 15 8
C. Ross	240 0 0		
Taplin & Makovski	238 10 0		

‡ Informal.

LONDON.—For the erection of children's conveniences in Southwark-park, for the London County Council:—

W. Prior & Co.	£327 3 3	F. & G. Foster	£234 0 0
F. Buil	290 10 0	R. Harding & Son	230 0 0
Griggs & Son	273 7 7	W. H. Hyde, Norwood-junction, S.E.*	206 0 0
Doulton & Co., Ltd.	264 0 0		
Chambers Bros.	253 0 0		

LONDON.—For the Claremont Institute extension, White Lion-street, Pinsbury. Mr. Alfred Conder, architect, Palace-chambers, Westminster. Quantities by Mr. Charles Blomfield, 40, Finsbury-square, E.C.:—

Hudson Bros.	£5,329	F. & H. F. Higgs	£4,745
G. S. S. Williams & Son	5,072	J. Grover & Son	4,738
McCormick & Son	4,987	E. Lawrance & Sons	4,685
L. & R. Roberts	4,986	W. Akers & Co.	4,675
H. Young	4,758	Holloway Bros.	4,670
		Chessum & Sons	4,395

LONDON EDUCATION COMMITTEE TENDERS.

Hampstead, Fleet-road (Redivision of Rooms).

C. Johnson	£485 0	Cowley & Drake	£347 0
L. H. & R. Roberts	474 0	Thompson & Beveridge	345 0
Stevens Bros.	457 0	J. Peattie	337 18
G. Neal	451 0	J. Christie	336 0
McCormick & Sons	435 0	Aldridge & Son, 78, Harlesden-road, Willesden Green*	310 0
Chincnen & Co.	425 0		
J. Stewart	407 0		
Marchant & Hirst	396 0		
G. Godson & Sons	358 0		

[The architect's (Education) estimate comparable with these tenders is £505.]

Wandsworth, Fountain-road (Re-erection of Iron Building).

T. J. Hawkins & Co.	£859 0	W. Harbrow	£708 0
T. Cruwys	834 0	F. Smith & Co., Ltd.	699 0
C. Leather & Sons	804 0	A. Leather, River-bank Works, Wandsworth*	622 0
Croggon & Co., Ltd.	782 10		
Humphreys, Ltd.	750 0		

[The architect's (Education) estimate comparable with these tenders is £546.]

Clapham (Ponton-road Day Industrial School), External Iron Ladder.

H. & S. Jones	£232 10	G. Mills & Co.	£195 0
Hayward Bros. & Eckstein, Ltd.	220 0	McDowall, Steven, & Co., Ltd.	174 0
Merryweather & Sons, Ltd.	218 0	Wilmer & Sons	160 0
Peirson & Co.	199 19	F. A. Norris & Co.	159 15
A. Ritchie & Co.	199 15	Cadogan Ironworks, Stanley-bridge, King's-road, Chelsea*	157 10
St. Pancras Ironwork Co., Ltd.	199 0		

[The architect's (Education) estimate comparable with these tenders is £150.]

TENDERS—*Continued on page* 305.

List of Contracts, etc.

COMPETITION.

Nature of Work.	By whom Required.	Premiums.	Designs to be delivered
*BATHS, FIRE-STATION, & BRANCH LIBRARY, REDDISH	Stockport County Borough ..	Not stated	No date.

CONTRACTS.

(For some Contracts still open, but not included in this List, see previous issues.)

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be delivered
Brass Sliding Poles, Hose Racks, etc., Great Brunswick-street ..	Dublin Waterworks Com'tee	City Architect, Municipal-buildings, Cork-hill, Dublin	Mar. 20
Road Material	Hunslet R.D.C.	W. B. Pindar, Clerk, Glasshouse-street, Hunslet, Leeds	do.
Painting, etc., at Hospital, Swallownest	S. Rotherham, etc., Hos. Com.	N. Creswick, 9, East-parade, Leeds	do.
Semi-Detached Dwelling-house, Park-street, Burghead	Waterloo with Seaforth U.D.C.	J. Jameson, Architect, 77, High-street, Elgin	do.
Taking Down and Re-erecting Disinfector Buildings	Leeks Waterworks Committee	F. Spencer Yates, Surveyor, Town Hall, Waterloo	do.
Villa at Dorking	Leeks U.D.C.	H. H. Horne, Station-road, Dorking	do.
Stores	Blackrock U.D.C.	Waterworks Engineer's Offices, Municipal-buildings, Leek	do.
Wesleyan Sunday-school, Beeston-hill, Leeds	Aston Manor Corporation	Danby & Simpson, Architects, 73, Albion-street, Leeds	do.
Materials	Nelson Plans, etc. Committee	W. E. Beacham, Surveyor, Town Hall, Leek	do.
Supplies	Oldham Corporation	R. F. Heron, Clerk, Town Hall, Blackrock, Co. Dublin	do.
Brickwork and Boiler Settings, etc., Electricity Department	Rochdale Gas, etc., Committee	G. H. Jack, Borough Surveyor, Council House, Aston Manor	do.
Annual Contracts	Easingwold R.D.C.	B. Ball, Borough Engineer and Surveyor, Town Hall, Nelson	do.
Materials	Sevenoaks R.D.C.	Borough Surveyor's Office, Town Hall, Oldham	Mar. 21
Stores	Airdrie Town Council	T. Hanbury Ball, Manager at Gasworks	do.
Whinstone and Slag	North-Eastern Railway Co.	F. J. H. Robinson, Clerk, Easingwold	do.
Widening and Fencing Part of Station-road, Halstead	do.	R. Bailey, Surveyor, Sundridge, Sevenoaks	do.
Timber Framing for a Gasholder	do.	A. Gillespie & Son, Engineers, 65, Bath-street, Glasgow	do.
Alterations to Refreshment-rooms, Selby Station	South Stoneham R.D.C.	W. Bell, Architect, York	do.
Tearoom, York Station	Darwen Corporation	do.	do.
Painting Station Buildings	Bredbury and Romiley U.D.C.	C. A. Harrison, Engineer, Forth Banks, Newcastle-on-Tyne	do.
Carting Gravel and Flints	East Indian Railway Co.	W. J. Potter, Glenroy, Portswood	do.
Annual Contracts for Materials	Dundee Harbour Trustees	Borough Engineer, Darwen	do.
Annual Contracts	Prescot Guardians	Surveyor, School Brow, Bredbury	do.
Laminated Bearing Springs for Waggons	Bridlington R.D.C.	C. W. Young, Secretary, Nicholas-lane, E.C.	do.
Caledon Jetty in Hennebique's Patent Ferro-Concrete	Farsley U.D.C.	J. Thompson, Harbour Engineer, Dundee	do.
Two Houses, One Shop, House and Stables	do.	Varteg House, Llanhilleth	Mar. 22
House, Plymouth-road, Ivybridge	Brixham U.D.C.	J. Hoare, 17, Western-rd., Ivybdge., & J. Tollit, Arch., Totnes	do.
Two Infirmary Blocks, Whiston Workhouse	Rhondda U.D.C.	J. Gandy, Architect, Masonic-buildings, St. Helens	do.
Whinstone & Slag	Finchley U.D.C.	F. H. Robson, Acting Clerk, Long-lane, Bridlington	do.
Granite Sets	Peterborough City Council	C. H. Wright, Surveyor, Council Offices, Farsley, Leeds	do.
660 lineal yds. of York Stone Kerb	East & West Molesey U.D.C.	do.	do.
Annual Contracts	Powell Duffryn Steam Coal Co.	J. L. Arlidge, Clerk, Town Hall, Brixham	do.
Road Works, Southborough to High Brooms	Norfolk Education Committee	Langridge & Freeman, Surveyors, The Broadway, Tun. Wells	do.
Street Works, Craneshay Bailey Estates	Eckington Parish Council	W. J. Jones, Surveyor, Council Offices, Rhondda	do.
Private Street Works	Driffield R.D.C.	Engineer to Council, Church End, Finchley	do.
Granite, Edging, Portland Cement, etc.	Scalby U.D.C.	J. W. Walshaw, City Surveyor, Guildhall, Peterborough	do.
Enlargement of Printing Premises, Harnor-street, Gravesend	Axbridge R.D.C.	Rayner & Bridgland, Architects, 16, New-road, Gravesend	do.
Annual Contracts	Repton R.D.C.	Surveyor, District Council Offices, East Molesey	Mar. 23
120 Houses at New Tredegar	Gateshead Corporation	G. Kenshole, Architect, Station-road, Bargoed	do.
Alterations and Enlargement of Corpurty School	Rev. J. Rees	A. F. Scott, Architect, Castle Meadow, Norwich	do.
Alterations at the old Police-court, etc., Eckington	Ramsey U.D.C.	Council Offices, 48, High-street, Eckington	Mar. 24
Road Material	Heywood Corporation	T. C. Beaumont, Surveyor, Driffield	do.
Two miles of Main Sewers	Governors, Camelford Sec. Sch.	C. H. Gott, Engineer, 8, Charles-street, Bradford	do.
Road Rolling and Scarifying	Nelson Plans, etc., Committee	G. A. Millard, District Surveyor, Cheddar	do.
Road Materials and Cartage	Pontypridd U.D.C.	C. F. Chamberlin, Clerk, Union Offices, Burton-on-Trent	do.
Road Materials	Leeds Gas Committee	N. P. Pattinson, Borough Surveyor, Town Hall, Gateshead	do.
Three Detached Residences at Fistral-road, Newquay	Mountain Ash U.D.C.	Cowell & Cowell, Architects, Central-chambers, Newquay	do.
Alterations, etc., to Institute of Engr.'s Bldgs., Park-place, Cardiff	Tonbridge R.D.C.	E. W. M. Corbett, Architect, Castle-street, Cardiff	do.
Church at Cynllwyn-du, Tylorstown	Edinburgh & Dis. Water Trust	E. M. Bruce Vaughan, Architect, Cardiff	do.
Broken Granite	Nuneaton, etc., U.D.C.	R. F. Sergeant, Clerk, Ramsey, Hunts	do.
Materials	East Ham Town Council	J. Ainsworth Settle, Bor. Eng., Municipal-bldgs., Heywood	do.
Extension of School Buildings, Camelford	Romford U.D.C.	Lawrence & Pomery, Solicitors, Camelford	do.
Revolving Screening Apparatus for Sewage Works	Little Hulton U.D.C.	B. Ball, Borough Engineer and Surveyor, Town Hall, Nelson	do.
Additions to Convent of St. Louis, Kiltimagh, Co. Mayo	Edinburgh, etc., Gas Commrs.	W. H. Byrne & Son, Architects, 20, Suffolk-street, Dublin	Mar. 25
Stoneware-Pipe Sewers at Pwllgwann, Treforest, etc.	Perth Town Council	P. R. A. Willoughby, Engineer, Council Offices, Pontypridd	Mar. 26
Dry Gas Meters	Southgate U.D.C.	R. H. Townsley, Gas Offices, East-parade, Leeds	do.
Sewer and Drain, Old Ynysybwl	Mountain Ash U.D.C.	Surveyor, Town Hall, Mountain Ash	do.
Materials, Team Labour, etc.	do.	F. Harris, Engineer, Broadway, Southboro', Tunbridge Wells	do.
667 tons of Cast-iron Pipes	do.	Superintendent of Works' Office, 12, St. Giles-st., Edinburgh	do.
Materials	do.	F. C. Cook, Surveyor, Council Offices, Nuneaton	do.
Scarlet Fever and Laundry Blocks, etc., Boundary-road	do.	A. H. Campbell, Borough Eng., Town Hall, East Ham, E.	do.
Blue Guernsey Granite	Durham Education Authority	Surveyor, Council Offices, Romford	do.
Annual Contracts	Lancashire and Yorkshire Rly.	J. H. Heyes, Council Offices, Little Hulton	do.
50 ten or twelve ton Coal Waggons	Sowerby Bridge U.D.C.	W. R. Kerring, Engineer, New Street Works, Edinburgh	do.
Causeywaying Carriageways	Southampton Corporation	R. M'Killop, Burgh Surveyor, 16, Tay-street, Perth	do.
WORKS AND MATERIALS	Lanchester R.D.C.	Council's Surveyor, Palmer's Green, N.	do.
Materials and Plumbing for New Services, Repairing, etc.	Lancashire and Yorkshire Rly.	Surveyor, Town Hall, Mountain Ash	Mar. 27
Broken Mountain Limestone and Gravel	do.	do.	do.
Native Stone	do.	do.	do.
Hauling Stone and Gravel	do.	do.	do.
Private Street Works at Miskin	do.	do.	do.
Council School at Emmaville	Solihull Guardians	Liddle & Brown, Archs., Prudential-bdngs., Mosley-st., Newc.	do.
Widening Bridge Carrying Crumpsall-lane over Railway	Ealing Town Council	Engineer, Hunt's Bank, Manchester	do.
Stores, etc.	do.	Mr. Whitehead, C.E., Council Offices, Sowerby Bridge	do.
Storm Water Sewer on Western Shore	Rushden U.D.C.	Borough Engineer's Office, Southampton	do.
1,500 yds. of Sewers, etc., Quebec and Wilks Hill	King's Lynn Corporation	J. R. Lupton, Surveyor, Lanchester	do.
Reroofing, etc., Warehouse at Hoghton	Commrs. of H.M. Works, etc.	Engineer's Office, Hunt's Bank, Manchester	do.
New Shed at Hoghton	Willesden District Council	do.	do.
Station Buildings, Platforms, etc., for "Haltes," at Linacre-road.	do.	do.	do.
Station Buildings, Platforms, etc., Captain's-lane, Bootle	do.	do.	do.
Laundry Block at Workhouse, Solihull	do.	W. H. Ward, Architect, Paradise-street, Birmingham	do.
Making-up Roads	N. Elmsall, etc., Burial Com.	C. Jones, Borough Engineer, Town Hall, Ealing, W.	do.
Soil Sewer in Hanger-lane	Whiston R.D.C.	do.	do.
Granite and Slag		W. B. Madin, C.E., Vestry Hall, Rushden, Northants	do.
Road Materials		J. H. Webb, Borough Surveyor, King's Lynn	do.
*ERECTION OF NEW HEAD POST OFFICE, BIRKENHEAD		H.M. Office of Works, Head Post Office, Liverpool	do.
*COLLEC., REMOVAL, AND DISPOSAL OF HOUSE REFUSE		Council's Engineer, Public Offices, Dyne-road, Kilburn, N.W.	do.
*SURFACE WATER CULVERT, NR. GLADSTONE PARK		do.	do.
BOUNDARY WALL, ISOLATION HOSP. GRDS., NEASDEN		do.	do.
*ROADMAK. & PAV. WKS., CRICKLEWOOD & HARLESDEN		do.	do.
Chapel Entrance Lodge, Boundary Walls, etc., S. Kirkby		W. E. Richardson, Quantity Surveyor, Rothwell, Leeds	Mar. 28
Road Materials, Carting, and Stones		R. J. Knapman, Sur., Delphlane Offices, Whiston, Preston	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be delivered
Two Single-Floored Sheds, Central Mole of New Dock	Caledonian Railway Co.	Sir. J. Wolfe Barry, 21, Delahay-street, Westminster, S.W.	Mar. 28
A Two-Floored Shed, North Quay of New Dock	do.	do.	do.
Timber Platform, North Side of the Tongue	do.	do.	do.
Offices, Latrines, Urinals, etc.	do.	do.	do.
Foundations and Rails for Crane Roads, etc.	do.	do.	do.
Forming and Ballasting Sidings, Roads, and Quays, etc.	do.	do.	do.
Water Mains, Hydrants, etc.	do.	do.	do.
*MAKING-UP CARRIAGEWAY OF WOODLAWN-ROAD	Fulham Borough Council	Borough Surveyor, Town Hall, Fulham, S.W.	do.
Private Street Works	Sale U.D.C.	W. Holt, Engineer, Council Offices, Sale	Mar. 29
Annual Contract for Materials	Normanton U.D.C.	A. Hartley, Consulting Surveyor, County-chambers, Castleford	do.
Materials, etc.	Hampton U.D.C.	Office of Council, Public Offices, Hampton, Middlesex	do.
Town Hall Tools	Montgomery Town Council	C. S. Pryce, Town Clerk, Montgomery	do.
Steel-Plate Girders, etc., for Widening Bridge	Workington Corporation	W. L. Eaglesfield, Borough Engineer, Town Hall, Workington	do.
Masonry, Abutments, Wing Walls, etc., for Widening Bridge	do.	do.	do.
Road Metalling	Newmarket U.D.C.	S. J. Ennion, Deva-chambers, Newmarket	do.
Two Filter Beds, etc., St. Clement, Cornwall	Truro Water Company	J. Mansergh & Sons, Engineers, 5, Victoria-st., Westminster	Mar. 30
Covered Service Reservoir, St. Clement	do.	do.	do.
Cliff Lift on West Cliff, Bournemouth	Bournemouth Town Council	F. W. Lacey, Boro. Engineer, Municipal Offices, Bournemouth	do.
Additions, etc., to the Mechanics' Hall Buildings, Forres	.....	J. Forrest, Architect and Surveyor, Forres	Mar. 31
Tramways, etc.	Chester Corporation	I. M. Jones, City Surveyor, Town Hall, Chester	do.
Fire Brigade Station and Fireman's Quarters	New Sarum Town Council	City Surveyor, Endless-street, Salisbury	do.
Road Materials	Sandwich Corporation	A. J. Firby, Borough Surveyor, Sandwich	do.
Heating Town Hall, etc., Greenock	Greenock Corporation	A. J. Turnbull, C.E., Master of Works, Greenock	do.
Painting Bridge and Poles, Barking and Beckton Light Railway	Barking Town U.D.C.	H. L. Howard, Electricity Works, Earl-street, Barking	do.
Water Supply Works, Chapmanslade	Warminster, etc., R.D.C.'s	W. H. Stanley, Eng., Market House-chambers, Trowbridge	do.
Alterations, etc., to Sewage Disposal Works	Burley-in-Wharfedale Sew. Bd.	Haller & Machell, Engineers, Corporation-chbrs., Dewsbury	April 2
Renewal of Bridges on Cleland and Mid-Calder Lines	Caledonian Railway Company	District Engineer, 3, Germiston-street, Glasgow	do.
Renewal of Bridges, Wishaw and Coltness Lines	do.	do.	do.
*ADDITIONS TO SCHOOL, ITCHEN (SHOLING)	Hants County Council	County Surveyor, The Castle, Winchester	do.
*MAKING-UP ROADS	Beckenham U.D.C.	Council's Surveyor, Beckenham	do.
Carnegie Library, Beale-lane, Crompton	Crompton U.D.C.	J. Horsfall, Architect, 4, Chapel-walks, Manchester	April 3
97,000 cubic ft. of Aregon Pine	Crown Agent for Colonies	Office of Crown Agent, Whitehall-gardens, S.W.	do.
Materials and Carting	Epsom R.D.C.	T. E. Ware, Surveyor, Waterloo-road, Epsom	do.
Kerbing, Paving, etc., Part of Shell-road	Lewisham Borough Council	Surveyor's Department, Town Hall, Catford	do.
*GRANITE KERB AND SETTS	Bromley Borough Council	Borough Engineer, Bromley, Kent	do.
*ENLARGEMENT OF GUILDFORD POST OFFICE	Commrs. of H.M. Works, etc.	H.M. Office of Works, Storey's-gate, S.W.	do.
*GENERAL HEATING OF WORKHOUSE, REDHILL	Reigate Union	E. Penfold, Architect, High-street, Reigate	do.
Extension of Town Hall (second section)	Bradford Corporation	F. E. P. Edwards, Whitaker-bldgs., Brewery-street, Bradford	April 4
Stores	Glasgow Corporatn. Tramways	46, Bath-street, Glasgow	do.
*COUNTY OFFICES, MOOTHALL, NEWCASTLE-ON-TYNE	Northumberland C.C.	J. A. Bean, County Architect, Moothall, Newcastle-on-Tyne	April 5
*WATER WORKS	Brixham U.D.C.	W. Vanstone, Engineer, Palace-chambers, Paignton	April 6
Allerton Bywater Drainage Work	Tadcaster R.D.C.	J. Simmons, Engineer, Bank-chambers, Doncaster	April 7
Outfall Sluice and Culvert, etc., Mouth of the Beam, Hornchurch	Essex Sewers Commission	A. Havelock Case, Engr., Broad Sanctuary-chbrs., W'minster	April 9
*PUBLIC LIBRARY	Cheshunt U.D.C.	J. Myrtle Smith, Architect, 8, Trafalgar-square, Chelsea, S.W.	do.
Heating, etc., at City Asylum Extension, Hillesden	Norwich Asylum Committee	A. E. Collins, City Engineer, Guildhall, Norwich	do.
*ADDITIONS TO SCHOOL, ITCHEN WOOLSTON	Hants County Council	County Surveyor, The Castle, Winchester	do.
Church at Ash Vale, Surrey	.....	A. J. Stedman, Architect, South-street-chambers, Farnham	April 17
Coalshipping Stage at Powell's Town Wharf, Newport	Messrs. Budd & Co.	Kirby, Son, & Brown, Engs., Stow-chambers, Newport, Mon.	No date.
Painting Seven Houses, Headlingley, Leeds	.....	A. Walker & Son, Ltd., 14, King-street, Leeds	do.
Twenty-five Cottages at New Crofton, near Wakefield	.....	Nostell Colliery Offices, near Wakefield	do.
Making and Sewering Scotchman-road, Manningham	.....	R. Armistead, 8, Charles-street, Bradford	do.
Caretaker's House	Shildon Working Men's Club	J. W. Hodgson, Architect, 65, Main-street, Shildon, R.S.O.	do.
220 yds. of Railway Track	.....	J. Parkinson & Son, Beamish-street, Newcastle-on-Tyne	do.
600 yds. of Wrought-iron Unclimbable Fencing, etc., East End Park	Leeds Corporation	Parks Superintendent, Municipal-buildings, Leeds	do.
Five Wrought-iron Hand Gates	do.	do.	do.
Furnace Casings and Columns, Gas Tobing, etc.	Staveley Coal and Iron Co.	C. Markham, Broad Oaks Works, Chesterfield	do.
Granite, Basalt and Slag, and Cartage	Wem R.D.C.	P. R. Francis, Surveyor, Wem	do.
*ERECT. OF PUB. ELEMENT. SCHL., KINGSTON-UPON-TH.	Education Committee	F. W. Roper, 9, Adam-street, Adelphi, W.C.	do.
*CONGREGATIONAL CHURCH, SOUTH NORWOOD	.....	Geo. Baines & Son, 5, Clement's-inn, Strand, W.C.	do.
*ADDITS. TO CENTRAL PREMISES, MARKET-ST., CREWE	Crewe Co-op. Frdly. Soc., Ltd.	Geo. E. Bolshaw, 2, Mill-street, Crewe	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*ARCHITECTURAL ASSISTANT	Corporation of London	2*l.* 10*s.* per week	Mar. 26
*ASSISTANT EXAMINERS IN PATENT OFFICE	Civil Service Commission	Not stated	April 5

AUCTION SALES.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*GAS ENGINE AND MACHINERY, ETC.; 242, COMMERCIAL-ROAD, E.—On the Premises	Norman & Son	Mar. 19
*DEALS, BATTENS, ETC.—Great Hall, Winchester House, Old Broad-street, E.C.	Churchill & Sim	Mar. 21
*ILFORD, FREEHOLD BUILDING LAND—At the Mart	C. C. & T. Moore	Mar. 22
*ROADS, SEWER AND DRAIN, HARROW	Allen & Hoar, 283, West End-lane, West Hampstead, N.W.	Mar. 23
*FREEHOLD VILLAS, ETC.—Torrington Hotel, North Finchley	Charles Sparrow & Son	Mar. 26
*FREEHOLD CORNER SITE, OLD KENT-ROAD, S.E.—At the Mart	Douglas, Young, & Co.	Mar. 28
*FREEHOLD FACTORY SITE, PECKHAM PARK-ROAD, S.E.—At the Mart	do.	do.
*FREEHOLD WHARF PROPERTY, PECKHAM PARK-ROAD, S.E.—At the Mart	do.	do.
*BUILDING SITE, HAYMARKET, S.W.	May & Rowden	Mar. 29
*FREEHOLD FACTORY SITES, NEAR HAYES STATION—On the Estate	Woods	do.
*SHOPFITTER'S, ETC., STOCK, 9A, VALLANCE-ROAD, E.—On the Premises	William F. Laing	do.
*ILFORD-BARKINGSIDE, FREEHOLD ESTATE—At the Mart	Alfred Savill & Sons	Mar. 30
*30,000 HARD CLAMP BRICKS—Station Brick Works, West Hoathly, Sussex	J. R. Thornton	Mar. 31
*FREEHOLD BUILDING LAND, SHEERNESS—At the Mart, E.C.	Tuckett & Son	April 2

* *Those with an asterisk are advertised in this number*: *Competitions*, iv.; *Contracts*, iv. vi. viii. x.; *Public Appointments*, xix. *Auction Sales*, xxx.

TENDERS.—*Continued from page* 303.

NETHY BRIDGE.—For water supply works, Nethy Bridge Special Water District, for the County Council of Inverness-shire. Mr. Gilbert, engineer, The Square, Grantown. Quantities by the engineer:—
D. D. Smith, Grantown-on-Spey £890

NOTTINGHAM.—For house, Edwalton-hill, Nottingham. Messrs. A. R. Calvert & W. R. Gleave, architects, 18, Low-pavement, Nottingham:—
F. W. Thompson & Son* £1,372

POOLE.—For erecting a new secondary school at Seldown, for the Education Committee. Mr. G. A. Bligh Livesay, architect, Fir Vale-chambers, Old Christchurch-road, Bournemouth:—

S. Brown & Sons	£11,400 0 0	W. J. Cross	£10,095 0 0
George & Harding	10,847 0 0	Jesty & Baker	10,077 0 7
W. E. Jones & Son	10,798 0 0	A. & F. Wilson	10,025 0 0
W. Hoare	10,729 0 0	Miller & Sons	9,995 0 0
Jenkins & Sons	10,318 0 0	H. W. Pollard	9,890 0 0
		Burt & Vick	9,840 0 0
		Jones & Seward	9,495 0 0

PWLLHELI.—For constructing a main sewer, sea outfall, and other works, for the Corporation. Mr. W. T. Douglass, engineer, 15, Victoria-street, Westminster, S.W. Quantities by engineer:—

R. H. B. Neal, Ltd.	£11,454 0 0	Hewett & Sons, Ltd.	£9,109 4 9
E. R. Lester	10,939 11 5	J. H. Macdonald	8,063 0 0
W. Fasey	10,679 5 5	W. Westwood	7,943 5 5
Brebner & Co.	10,643 9 2	J. Riley, Cheltenham*	8,398 2 6
P. Edwards	9,637 0 9		
G. Bell	9,561 11 9		

PLYMOUTH.—For the erection of a bridge to connect the main block with the special block at Salisbury-road schools, for the Education Authority. Mr. H. J. Snell, architect, 11, The Crescent, Plymouth:—

W. E. Blake, 23, Salisbury-road, Plymouth .. £200

SEAFORD.—For drainage works on the L.B. & S.C. Railway Co.'s works, for the Urban District Council. Messrs. Pollard & Tingle, engineers, 31, Old Queen-street, Westminster, S.W.:—

J. Jackson	£453 0	G. Napier & Son	£219 10
W. Young	450 0	W. L. Wallis & Co., Eastbourne* ..	180 0
R.W. B. Neal, Ltd.	300 0	J. Carley	148 15
J. G. Porter.....	243 0		
H. A. Chambers..	233 5		

SKEGNESS.—For sewers, etc., Lifeboat-avenue, Marine-avenue, and Trafalgar-avenue, for the Urban District Council. Mr. R. Hudson, Surveyor, Skegness. Quantities by Surveyor:—

Parker & Son	£273 14 6	J. T. Turner & Sons	£167 2 6
A. E. Palmer..	246 18 6	J. Wright	164 0 0
G. G. Dunkley	240 10 0	W. H. Hill, Skegness* ..	148 14 11
Hardy, Bate, & Co.	187 1 5		
G. E. & H. Holmes	169 14 3		

SOBERTON.—For building an engine-house, boiler-house, machine-shop, coal-store, chimney-shaft, superintendent's house, cottages, and other works at Soberton, Hants, for the Gosport Waterworks Company. Mr. E. T. Hildred, A.M.I.C.E., Engineer:—

R. H. B. Neal, Ltd.	£6,208	J. Croad.....	£5,365
H. Jones	5,945	H. Stevens & Co. ..	5,360
Playfair & Toole ..	5,848	J. Hunt	5,345
C. M. Dash	5,805	Jenkins & Sons, Ltd.	5,287
H. I. Sanders	5,757	H. Sweetland	5,065
J. H. Vickers.....	5,699	F. Osman, Southampton*.....	4,989
F. Corke.....	5,640		
C. J. Lear & Sons..	5,593		
J. Crockerell	5,550		

SOUTHWICK.—For private street works and improvements, Gordon-road, George-street, etc., for the Urban District Council. Mr. G. W. Warr, Surveyor, Council Offices, Southwick. Quantities by Surveyor:—

J. Whittington	£2,112 3 11	J. Jackson ..	£1,880 11 0
J. Parsons & Sons.....	2,097 0 0	Peerless, Dennis, & Co., Eastbourne* ..	1,868 0 0
C. H. King ..	1,961 8 9		

TOTTENHAM.—For the erection of a school to accommodate 1,636 children, on the Belmont-road site, West Green, for Tottenham Education Committee. Mr. C. E. T. Laurence, architect, 22, Buckingham-street, Adelphi, W.C.:—

		Amount to Deduct if Walls are Plastered Above Dadoes.
A. J. Bateman.....	£26,717 0 0	£2,915 0 0
H. J. Carter	25,149 0 0	2,007 0 0
Chessum & Sons	25,597 0 0	2,240 0 0
Clark & Sons	29,189 0 0	3,075 0 0
F. J. Coxhead	23,692 0 0	1,945 0 0
Davey, Ltd.	24,367 0 0	2,465 0 0
Fairhead & Son	23,590 0 0	1,979 0 0
Goddard & Son	26,199 0 0	2,560 0 0
J. Guttridge	22,966 0 0	1,766 0 0
Hooper, Neary, & Co.	29,201 14 2	1,997 6 10
Jackson & Co.	32,485 0 0	1,416 0 0
Kerridge & Shaw....	24,640 0 0	1,847 0 0
Lawrence & Son	24,384 0 0	1,785 0 0
Leslie & Co.....	27,526 0 0	2,308 0 0
McCormick & Sons ..	26,430 0 0	1,428 0 0
J. & W. Maddison ..	24,516 0 0	2,231 0 0
Moss & Sons.....	24,042 6 10	1,817 6 6
B. E. Nightingale ..	25,896 0 0	1,536 0 0
Oak Building Co....	28,768 0 0	3,099 0 0
Pethick Bros.	28,883 0 0	3,700 0 0
Pollard & Brand	25,229 0 0	2,064 0 0
A. Porter	24,500 0 0	1,930 0 0
C. Roper	26,900 0 0	3,122 12 2
Rowley Bros.	22,856 0 0	2,027 0 0
Shepherd & Co.	24,445 0 0	2,073 0 0
A. E. Symes.....	26,109 0 0	2,054 0 0
Treasure & Son	25,702 0 0	2,167 0 0
Wall, Ltd.....	22,778 0 0	1,673 0 0
Wallis & Sons	24,266 0 0	2,000 0 0
W. E. Westgate	25,444 0 0	1,714 0 0
F. & A. Willmott....	22,616 0 0	2,340 0 0
Youngs & Son	24,433 0 0	1,850 0 0

SOUTHEND-ON-SEA.—For proposed alterations and additions to No. 1, Marine-parade, for Mr. P. Zanchi. Mr. Charles Cooke, architect and surveyor, Tower-buildings High-street, Southend-on-Sea:—

F. P. Guiver	£420	F. & E. Davey, Ltd., Southend-on-Sea*..	£373
A. R. Whur	383		

WALLSEND.—For erecting a mortuary and urinal, Portugal-place, for the Corporation. Mr. G. Hollings, Borough Surveyor, Corporation Offices, Wallsend:—

J. T. Charlton, Elsdon-road, Gosforth, Northumberland £330 4 3

WITTON.—For alterations, repairs, colouring, painting, etc., at Witton Hall, for the Aston Guardians. Messrs. C. Whitwell & Son, Birmingham:—

J. Dodd, jun., 111, Angelina-st., Birmingham* £448 5

WORKINGTON.—For erecting new co-operative stores at Bridgfoot, for the Beehive Co-operative Society. Messrs. W. G. Scott & Co., architects and surveyors, Victoria-buildings, Workington:—

Builders: Wilkinson & Miller, Workington	£246	0 0
Joiner: J. Steel, Workington	179	12 6
Slater: T. Mandle, Maryport	44	0 0
Plasterers: J. Lawson & Sons, Workington	71	0 0
Painter: W. Wildridge, Workington	20	6 6
Plumber: D. M. Walker, Workington	27	13 0

WORKINGTON.—For works at four houses in Roper street. Messrs. W. G. Scott & Co., architects and surveyors, Victoria-buildings, Workington:—

Builder: T. Brown, Workington	£280	0 0
Joiner: R. Douglas, Workington	134	0 0
Slater: E. Burrow, Workington	34	16 0
Plumber: D. M. Walker, Workington	24	10 0
Plasterers: Kaberry Bros., Workington	57	10 0
Painter: W. Wildridge, Workington	15	0 0

WORKINGTON.—For alterations and additions to the Beehive Co-operative Stores in Vulcan's-lane. Messrs. W. G. Scott & Co., architects and surveyors, Victoria-buildings, Workington:—

Builders: Wilkinson & Miller, Workington	£48	10 0
Slaters: J. Lythgoe & Sons, Workington	11	6 10
Plumber: W. Stewart, Workington	26	10 0
Plasterers: J. Lawson & Sons, Workington	35	0 0
Painter: K. Hodgson, Workington	16	14 0

WORKSOP.—For erecting an operating-room at the Kilton-hill Infirmary, for the Guardians. Mr. T. Webster, architect, Market-street, Worksop:—

T. H. Marrison ..	£167 8 0	G. G. Middleton	£144 0 0
G. Wright	167 0 0	I. Doncaster ..	141 10 0
Bowles & Son ..	150 0 0	C. Ilett & Sons ..	140 0 0
C. A. Leverton ..	148 12 6	Dennis, Gill, & Son, Doncaster*	137 0 0
A. Chadwick ..	146 0 0		

W. H. Lascelles & Co.

LIMITED,
121, BUNHILL ROW, LONDON, E.C.

Telephone No. 1365 London Wall.

HIGH-CLASS JOINERY,
LASCELLES' CONCRETE.

Architects' Designs are carried out with the greatest care.

CONSERVATORIES,
GREENHOUSES,
WOODEN BUILDINGS,

Bank, Office, and Shop Fittings.

CHURCH BENCHES & PULPITS.

ESTIMATES GIVEN ON APPLICATION.

The BATH STONE FIRMS, Ltd., BATH.

For all the Proved Kinds of

BATH STONE.

FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

HAM HILL STONE.
DOULTING STONE.

The Ham Hill and Doulting Stone Co., Limited (incorporating the Ham Hill Stone Co. and C. Trask and Son, The Doulting Stone Co.).

Chief Office:—Norton, Stoke-under-Ham, Somerset.

London Agent:—Mr. E. A. Williams, 16, Craven-street, Strand.

GREEK MARBLE.

White and Blue Pentelikon at Low Prices for BUILDING PURPOSES.

Beautiful Colours for Interior Decoration.

Full Particulars and Samples:—

MARMOR, LIMITED,
18, Finsbury-square, E.C.

See Advt. p. xxiii.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co.

SPRAGUE & CO., Ltd.,
LITHOGRAPHERS,

Employ a large and efficient Staff especially for Bills of Quantities, &c.

4 & 5, East Harding-st., Fetter-lane, E.C.

QUANTITIES, etc., LITHOGRAPHED accurately and with despatch. [Telephone No. 4[illegible] Westminster.

METCHIM & SON {6, PRINCES STREET, S.W., and 32, CLEMENT'S LANE, E.C.

"QUANTITY SURVEYORS' DIARY & TABLES," For 1906, price 6d., post 7d. In leather, 1/-, post 1/1.

PILKINGTON & CO

(ESTABLISHED 1838.)
MONUMENT CHAMBERS,
KING WILLIAM STREET, LONDON, E.C.
Telephone No., 6319 Avenue.

Registered Trade Mark.

Polonceau Asphalte.

PATENT ASPHALTE and FELT ROOFING.
ACID-RESISTING ASPHALTE.
WHITE SILICA PAVING.
PYRIMONT SEYSSEL ASPHALTE.

Patent "OPALITE" Tiling

TRADE MARK.
With Sheimerdine's Patent Granulated Backing.

SANITARY. DURABLE. EFFECTIVE.

Is non-porous, and absolutely impervious to bacteria, fungi, or vermin.

The only Reliable Material for Lining Walls of SUBWAYS, LAVATORIES, AREAS, KITCHENS, BATHROOMS, &c.

Invaluable for HOSPITAL WORK, Operating Rooms, &c.

WILL NOT CRACK OR CRAZE.

Over **250,000** *Square Yards Fixed in* **LONDON** *Alone.*

"OPALITE."

SUPPLIED AND FIXED BY

WILLIAM GRIFFITHS

(London Concessionaire of Patent Rights of the National Opalite Glazed Brick and Tile Syndicate, Limited).

126, HAMILTON HOUSE, BISHOPSGATE ST. WITHOUT, E.C.

Telegraphic Address: "OPALITE, LONDON." Telephone Nos. 2363 and 2369, LONDON WALL.

ORDINARY GLAZED TILING Executed with Care and Despatch by Competent Workmen.